The Builder.

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Foreign Building Regulations.—I.

IT may be interesting to those concerned to know that the legislative steps recently taken by the Home Secretary for the prevention of building accidents are not without parallel. It is a common mistake made by those unversed in such matters to think that most of the enactments which offer a check upon unlicensed industrial competition in this country are restrictions to which the foreigner is a stranger. Far from this being the case, it should be within public knowledge that in some of the regulations dealing with industrial life this country falls behind the standard set by other communities. A particular instance of this is the age-limit at which child labour can commence here—viz., at twelve years of age, and until very recently it was a full year younger. Abroad, the age of thirteen is considered the lowest at which work should commence, and it is generally adhered to. Probably in many other respects restrictions of this nature are more severe at home than elsewhere, but still it will be seen that no sound argument against their imposition and enforcement can prevail on the ground that labour abroad is allowed a freedom to which in this country it is not admitted. So far as building regulations are concerned, the City of New York, apart from the Greater New York Charter, has adopted a code with powers in this direction; and the Italian Government, in 1900, by Royal decree approved regulations with the same intentional effect. Various Italian municipalities also have safety clauses in their building regulations. A brief glance at the principal dangers aimed at in the places mentioned will be interesting.

The more important and certainly the most drastic regulations in New York are those contained in the Charter. Very little detail is mentioned, but considerable powers are in the hands of the inspectors. For instance, on complaint being made to an inspector, he may prohibit the use of scaffolding he may consider unsafe, and he may also require it to be reconstructed or altered so as to avoid danger. To show, apparently, that attention has been given to the complaint, a certificate has to be attached to the scaffolding about which complaint has been made, stating whether it may be considered safe or otherwise. The procedure, if dangerous conditions prevail, is that the official shall serve a written notice upon the person responsible for the erection and shall give warning against its use. The notice need not be served personally, but may be fixed to the erection causing danger. If the necessary alterations or means of strengthening are carried out the structure is to be considered safe according to the discretion of the inspector or his superior. The officials are given the right of access to buildings at all reasonable hours.

So far as strength is concerned a limitation is imposed that the scaffold shall not carry more than one quarter of the weight it could carry as a maximum load, and if the scaffold is a suspended one the same proportion for safety shall be adhered to.

Swinging scaffolds also receive attention, and no more than four men may be carried in them at one time.

The use of a guard rail is also imperative on swung or suspended scaffolds, and must be fixed on platforms over 20 ft. from the ground or floor. The guard or "safety rail," as it is termed, must be of wood and properly bolted, secured and braced, and rise at least 34 in. above the floor or main portions of the scaffolding or staging and extend along the outside and ends.

Suspended scaffolds must be fastened to prevent swaying from the building—a very necessary precaution in high winds. Those who have seen the painter's boats in use when cleaning the clock face of Big Ben will readily recall the extreme movement which took place during what was quite a moderate wind near the ground, the freedom from obstruction to the wind's force in the higher altitudes no doubt accounting for this.

Another regulation gives general protection to life and limb. It provides that a person employing or directing another to perform labour of any kind in the erection, repairing, altering, or painting of a house, building, or structure shall not furnish or erect or cause to be furnished or erected for the performance of such labour, scaffolding, hoists, stays, ladders, or other mechanical contrivances which are unsafe, unsuitable, or improper,

and which are not so constructed, placed, and operated as to give proper protection to the life and limb of a person so employed or engaged. This clause gives very wide discretionary powers to the officials answerable for its enforcement.

As might be expected, steel construction is considerably dealt with. As a rule the steel framework of a building is pushed on much ahead of the other work, and this causes a considerable amount of danger to those engaged on the lower portions of the building. The danger arises from the dropping of material. To obviate this danger as far as possible, it is arranged that certain floors shall be covered as soon as possible, according to the nature of the material used. Where the specifications require the floors to be arched between the beams, or where the filling in is to be of fireproof material or brickwork, the contractor shall complete the flooring or filling in as the building progresses, to not less than within three tiers of beams below that on which the iron work is being erected.

In the case of wood floor beams, where the floors are not to be filled in with brick or fireproof material, the contractors for carpenters' works shall lay the underflooring on each story as the building progresses, to not less than within two stories below the one to which the building has been erected. Where double floors are not to be laid the contractor shall keep planked over the floor two stories below the story where the work is being performed.

If the floor beams are of iron or steel, the contractors for the iron or steel work, or the owners of such buildings, shall thoroughly plank over the entire tier of iron or steel beams on which the structural iron or steel work is being erected, except such spaces as may be reasonably required for the proper construction of the iron or steel work and for the raising or lowering of material to be used in the construction of such places, as may be designated by the plans and specifications for stairways and elevator shafts.

It is also provided that if hoists are used within a building for the purpose of lifting materials to be used in the construction, the contractors or owners shall cause the shafts or opening in each floor to be enclosed or fenced in on all sides by a barrier at least 8 ft. in height.

It seems somewhat strange to those having knowledge of English arrangements for the construction of buildings that the owner should be made a party for the proper carrying out of these requirements.

The system of hoisting by means of boom jibs on the outside of the buildings is also dealt with, and the regulations state that where the building is five stories or more in height no lumber or timber shall be hoisted or lifted on the outside of the building.

The enforcement of these regulations is in the hands of the Factory Inspector and the Chief Officer of any city charged with the duties of carrying out the building laws of the city.

The city of New York in its building code has some powers for governing the safety of the public in like manner as some of the different municipalities in this country.

Sect. 80 of the code provides that whenever buildings are erected or increased to over 65 ft. in height upon or along any street, the owner, builder, or contractor constructing or repairing such buildings, shall have erected and maintained a shed over the side walk in front of the said premises, extending from building line to kerb; the same to be properly, strongly, and tightly constructed so as to protect pedestrians and others using such streets.

Where outside scaffolding is required to carry on the construction of buildings over 85 ft. in height, whether the same is constructed of poles or thrust-out scaffolding (termed needle scaffolding in this country), there must be erected on its outer edge and ends an enclosure of wire netting of not over 2 in. mesh, or of boards not less than 3 in. thick, placed not over 1½ in. apart, and well secured to uprights of not less than 2 in. by 4 in., fastened to timbers and resting on the putlogs or thrust-outs. The enclosure to be carried to a height of 5 ft. above the level on which the men are working. The thrust-outs must not be less than 10 in. by 3 in. of spruce or yellow pine, and doubled or tripled as may be required by the load to be carried, and be thoroughly braced and secured. The timber, instead of being doubled, may be in one piece if proportioned to the load.

The flooring on the thrust-outs must be tightly constructed with planking. This flooring and enclosure must not be removed until a similar arrangement is prepared and in position on the story above.

The use of wire-netting would be an innovation in this country. It presents some advantages in that it is light and would be strong enough to prevent material falling if securely fixed, which is not such an easy matter as would appear at first sight, when remembering the rough usage it would certainly get. The fan-guards as seen on our buildings, combined with edge boards, undoubtedly offer as much protection, and can be counted upon to last the job out. Tarpaulins make an effective substitute, but offer much resistance to the wind. The other by-laws are very similar to those here adopted, with the exception of the limitations as to height which with us do not exist.

NOTES.

The Vienna International Congress.

WE may remind those who wish to attend the International Congress of Architects at Vienna, that the date of the Congress is from the 18th to the 24th of May. The Council of the Institute of British Architects hope that the list of British members may be as large as possible, more especially as the London Congress of two years ago was very largely attended by foreign architects. Arrangements are being made for special terms to be granted to members of the Congress by the railway companies and hotel proprietors, particulars of which will be furnished to members as soon as possible. The probable cost of the return fare from London to Vienna will be about 8*l.* 15s. first class, *viâ* Calais and Bâle. The return tickets will be valid for forty-five days, and may be used for alternative return routes, of which further particulars will be issued. For those wishing to travel together a personally conducted party will be made up which will leave London on Friday, May 15, and arrive in Vienna on Sunday, the 17th. The subscription to the Congress is fixed at 1*l.* 1s., and for ladies at 12s. 6d. It is recommended that the subscriptions should be paid in to the Secretary of the Institute of Architects, and the amount will then be forwarded to Vienna on the part of the Committee of the British Section. This will be likely to save trouble and misunderstanding.

The Excavation of Memphis.

THE announcement that Professor Flinders Petrie is beginning the systematic excavation of Memphis, under the auspices of the British School of Archæology in Egypt, is of more than ordinary interest, and we hope that the funds at disposal will prove as adequate to the task as is the man. During the past few years the brilliant results at Thebes, the central site of the Middle Empire, have eclipsed all other archæological research in Egypt, except perhaps that of Messrs. Grenfell and Hunt at Oxyrhynchus; but these results might have been foreseen or at least partly expected. With Memphis it is different; that vast capital of the Ancient Empire, which was predominant during the first ten Dynasties, and then, after a period of partial decay, revived, with the rest of Egypt, under the great Rameseid builders, had a living history of some 4,000 years, lasting till well after the commencement of our era; but it was too fatally near to Cairo, and too subject, without watchfulness, to the inundation of the Nile, to avoid rapid extinction after the rise of Alexandria and, subsequently, Cairo, had rendered it of quite secondary commercial importance. The site is some twelve miles south of Cairo on the west bank of the Nile, near to Sakhara, and opposite Helouan. The traveller on his way to the former turns aside to see the fallen colossus of Rameses II., one of the very few tangible remains above ground of the glory of Memphis. What may now be found beneath the permanent layers of Nile mud, considering that the temples and palaces must have been ransacked for stone to build Cairo, is purely a matter of conjecture; but it is quite possible that many extremely interesting ground plans may be recovered, apart altogether from statuary and other relics from the great temple of Ptah, said to be founded by Menes of the First Dynasty, and maintained and re-embellished by many subsequent kings. Under Professor Petrie also—fully aware of the importance of the Mediterranean relations of Egypt—it is quite probable that comparative archæology may gain greatly.

The Port of London.

A MATTER of considerable importance connected with the Government Bill dealing with the Port of London may probably have been discussed by the London County Council before the publication of our present issue. The question is

whether the Council are prepared to assist the Government by making any contribution towards the cost of dredging and otherwise improving the channel of the Thames below the old Thames Tunnel, and to guarantee the interest on the stock to be issued by the proposed port authority. As we have pointed out in a previous Note, the improvement of the river has already been commenced by the Thames Conservancy, upon whom powers were conferred by their Act of 1905 to charge increased tonnage dues so as to provide funds for executing the work. The Conservancy are also about to ask for additional powers enabling them to make further improvements. In view of these facts the Rivers Committee of the County Council quite reasonably consider that no contribution on the part of the Council is necessary. The subject of a guarantee on the port stock is one that can scarcely be dealt with by the Council until it is known whether the Government measure is intended to provide for purchase of the docks or to create an authority acting in competition with the dock companies. In the former event a very heavy responsibility would be laid upon the general ratepayers, and in the latter the ratepayers would be forced into the position of supporting an authority competing with private enterprise. We think the Council would be well advised in deciding to decline the invitation to embark in matters that strictly are beyond their proper sphere of action.

Railway Amalgamation. THE decision of the Court of Appeal that the agreement entered into between the Great Northern Railway Company and the Great Central Railway Company is one which the Railway and Canal Commissioners have no power to approve will be a disappointment to the public and all those who advocate railway amalgamation. The judgments deal with many complicated legal questions, but the main ground of the decision is that the particular arrangement proposed was not contemplated by the Act of 1858 under which the companies derive their powers, and is therefore *ultra vires*. The object can still be attained by obtaining Parliamentary powers, but in certain quarters there is in Parliament little sympathy with railway companies, and unacceptable terms are sometimes attached to the new Parliamentary powers sought to be obtained.

Life-saving Apparatus in Mines. THE questions asked in the House of Commons as to colliery rescue stations raised some very interesting considerations. Only two such stations at present exist, both situated in Yorkshire, but one other station is shortly to be completed in Lancashire. The Home Secretary said that the Government were anxious to promote the establishment of such stations, but that the difficulty was to know what apparatus to recommend, as knowledge of the question was not sufficiently advanced, and he referred to the loss of life which had attended the use of apparatus both at Courrieres and Hamstead. It was, however, apparently not suggested to offer prizes to promote investigation and invention with reference to such apparatus, and we think that this course might well be adopted. Loss of life has never daunted rescuers from saving life at sea, and miners have already proved their self-devotion and courage in attempts to save life. Some of the inventive genius and bravery which has been devoted to the invention of flying machines might well be diverted to this more practical form of research, and we trust some active steps will be taken to promote invention in this direction.

The Water Supply of Brighton. IN a lecture of unusual interest, Mr. James Johnston, the Engineer to the Brighton Corporation Waterworks, gave an account last week of the manner in which water is obtained, stored, and delivered to the area—now covering more than forty-four square miles—within the jurisdiction of the water department. The only two rivers near Brighton are fifteen miles apart, and neither of them is suitable for water supplies. In the days of the waterworks company water was obtained by sinking wells in the chalk of the Downs in the manner adopted ages ago by the Romans. To-day the water is obtained by driving headings from wells at the depth of about 20 ft. below sea level, these headings being situated so as to intersect the deep fissures by which water finds its way from the surface of the hills. Owing to the deterioration of chalk water after exposure to the air, the supplies pumped from wells and headings are stored in comparatively small covered reservoirs at such altitude that in case of emergency as much as 400 ft. pressure can be made available in the mains. The availability of this high pressure is incidentally of advantage in the respect that fire engines are quite unnecessary throughout the greater part of the district.

The Kingsway Subway Extension. SUCH progress has been made with the project for extending the Kingsway Subway to the Embankment that the new through route will probably be open to the public in the course of a month or two. At the point where they emerge upon the Embankment between Savoy-street and Waterloo Bridge, the lines will curve outwards to make connection with the tracks proceeding east and west, thus enabling cars to pass over either Blackfriars or Westminster Bridge. Some alterations to Waterloo Bridge have been necessary in order to permit the passage of two cars abreast through the abutment, but we are glad to see that the original stones have been replaced in their relative positions as far as practicable, and that the new work involves no departure from the general character of the structure. While the extension will make it possible for passengers to proceed without change of car from the extreme north to the extreme south, and *vice versa*, of the County Council tramway system, through services can obviously only be established on a few of the various routes or at comparatively long intervals on all of them. Moreover, the utility of the connecting link must be seriously limited by the unfortunate decision of the last Council to make the subway too shallow for the double-decked cars then and now almost universal on the northern and southern systems.

Fuel Values. IN his second lecture on "Fuel and its Future," delivered last Monday before the Royal Society of Arts, Professor Lewes discussed the comparative merits of solid, liquid, and gaseous fuels. He pointed out that the value of a fuel does not depend entirely upon the amount of heat evolved by its combustion, but is influenced by the practicability of utilising the heat. When a solid fuel is employed the proportion of heat unavoidably lost is commonly much greater than when a gaseous fuel is employed. With a solid fuel about 10 per cent., and with a gaseous fuel 40 to 50 per cent., of the heat emitted by combustion may be utilised. Similarly with oil, the evaporative power of this liquid fuel is greater than that of solid fuel. A given weight of oil will do more work than an equal weight of coal, and the labour expended in feeding a furnace is very much less with oil than with coal. Oil is therefore valuable as a substitute for coal in steamships, but, since our supply of oil may be cut off in time of war, oil is used only as an auxiliary in large British warships, said Professor Lewes. It is only in some of the smaller vessels, such as destroyers, that entire dependence is placed upon oil as a fuel. Oil is most readily utilised by injecting it with steam and air into the furnace, but, although in the mercantile marine steam may be used, space cannot be allowed on a battleship for the additional steam plant required, and the oil has therefore to be injected under high pressure without admixture with steam.

Alternating Current Measurements. AN important paper on alternating current measurements was read by Dr. Sumpner and Mr. J. W. Record to the Institution of Electrical Engineers this week. The problem of alternating current measurement is now one of considerable commercial importance owing to the development of power-stations and the sale of electricity in bulk. In some cases an error of 1 per cent. in the measurement means a difference of some hundreds of pounds in the amount of the bill, and has sometimes led to large sums of money being spent in the law courts or in arbitration cases. It is now nearly seventeen years since Professor Ayrton and Dr. Sumpner first showed in their Royal Society paper how power in alternating currents circuits could be accurately measured. Dr. Sumpner a few years ago, in a paper to the Physical Society, indicated how commercial instruments could be made which would be able to stand rough usage and yet give accurate readings. Some of these instruments are described in this paper and are well adapted for their purpose. When the highest degree of accuracy is required, as in certain laboratory measurements, more elaborate apparatus should be used, but for every-day work at central stations the instruments shown to the meeting would be more suitable. The authors showed that some of their instruments could be applied

to other purposes than those for which they were primarily intended. Their wattmeter, for instance, can measure the capacity of a condenser accurately, no calculation being required, as the scale is calibrated so as to be direct reading. As hundreds of thousands of condensers are used for telephone work, it seems to us that this is an important application of the instrument, as it will save a great deal of labour.

An American Filter Roof Failure.

IN a paper read before the New England Waterworks Association, Mr. Sanford E. Thompson discusses the causes which contributed to the collapse during construction last year of part of the groined roof for a filter bed at Lawrence, Massachusetts. The design embodied groined arches supported on columns, and was of a type which has been adopted with perfect success in numerous structures of the same class for many years past. The columns and arches were of plain concrete and were of ample proportions. Therefore the failure is not attributable to the design, and Mr. Thompson comes to the conclusion that it was due to a combination of two causes neither of which alone would probably have occasioned the accident. The causes were: thrust of the arches and the weak condition of the concrete in consequence of low temperature retarding the setting process; improper screening of gravel giving an excess of sand; and inefficient washing of the gravel. By removing the centring at too early a period the soft concrete had to take up arch thrust which it was unable to resist, and failure was inevitable. Nearly all the mishaps that occur in concrete work are due to premature removal of the centring, a point whose importance we have often emphasised. It is well to remember also that the setting of concrete is very much retarded in cold weather, and may take weeks or even months to attain the strength expected in a few days.

The Corrosion of Steel.

IN the *Journal* of the Franklin Institute Mr. A. S. Cushman, of the United States Department of Agriculture, contributes a suggestive paper dealing with the corrosion of steel. Having shown that the rusting of iron is caused first by solution of the metal by exchange with hydrogen and next by the action of oxygen on the dissolved portion the author argues that both actions are accompanied by a transfer and neutralisation of electric charges on the reacting atoms or ions. The electrolytic theory of corrosion supported by Mr. Cushman demands greater homogeneity and purity than are generally exhibited by modern iron and steel, and particularly calls for the absence of metallic impurities differing electrochemically from iron. Much complaint has been made of late years concerning the excessive corrosion of steel, and makers in the United States are beginning to pay serious attention to the point. Possibly British makers are doing the same, but we have not heard much of their efforts so far. The general adoption of specifications for steel specially calculated to withstand corrosive influences would soon cause a general improvement.

St. John's-road Workhouse Competition.

A COPY has been sent to us of the Instructions to Architects issued by the Guardians of St. Mary, Islington, for a limited competition for proposed new vagrant wards and extension of the receiving wards at St. John's-road Workhouse, Upper Holloway. The instructions are badly drawn up, in very vague wording; no indication is given of the amount which the Guardians have available for the purpose, only an instruction to the competitors to add an estimate of the cost of their proposed building, which is hardly reasonable; competitors ought to have some guide as to the limit of cost intended. Finally, it is stated that the magnificent sum of 15*l.* will be paid for the best design for the vagrant wards, and 10*l.* for that for the receiving wards: "The premiated plans are to become the property of the Guardians, who will not bind themselves to adopt either design, and will be at liberty to modify either premiated design in any way they may think proper, or be required. . . . If either scheme, or both, are carried out, the employment of the architect or architects and remunerations will be decided on by the Guardians." Nothing is said of an assessor. We hope no architect who respects himself and the profession will have anything to do with such an invitation.

No. 1, Portman-square.

THIS fine mansion, of which the two concurrent leases will be offered for sale at the Mart on March 31, is one of the original houses in the square which was built on the estate now owned by Lord Portman, and was completed in 1784. The principal decorations are by Robert Adam, comprising those of the hall, with its ten scagliola columns, and the main winged-staircase, and the ceilings, panelled walls, and sculptured marble chimney-pieces of the library (with the fitted bookcases), the dining-room, and the three reception-rooms. The ceiling of the front drawing-room is a handsome piece of work, having a deep frieze and cornice, with circular panels painted by Angelica Kauffmann; the fireplace stands in a segmental recess. The stair-landings are lighted by a domed top through the roof. The elevation of the house on the west side has been slightly altered; its former state is depicted in A. Pugin's drawing of the illuminations in front of the house of M. Otto, the French ambassador, on the night of April 29, 1802, after the ratifying of the Peace of Amiens. M. Otto had removed to Lady Dunsany's house in December of the previous year.

The Hamburg-America Line Office.

WE give this week (page 338) some particulars as to the work at the Hamburg-America Line offices, now practically completed; but we may add a word here in recognition of the architectural and decorative character of the work in the large main office, which renders it one of the most artistic ground floor offices in London. The plaster decoration (of which we shall give an illustration shortly) is unusual and original in its symbolical character; and the effect of the mahogany woodwork, unstained and merely polished and picked out with mother-of-pearl inlay, is very good, and not nearly so heavy as that of stained mahogany is apt to be. We were also struck with the excellent effect of the polished (Keene's) cement facing on the columns, which looks almost as well as marble, without coming into the category of imitations. The completion of the building, and the working out of the decorative details, has been entirely in the hands of Mr. A. T. Bolton, and he has a right to be very well satisfied with the result.

Teaching by Correspondence.

THE managers of the "International Correspondence Schools" have held a small exhibition for the last fortnight in the Arbitration Room of the Safe Deposit Buildings in Chancery-lane, with the object of illustrating the methods and some of the results of their teaching. The National Correspondence Schools is apparently a project of American origin, but they have now established a branch in England, and we understand have about a thousand corresponding pupils in this country. The subjects which they teach are mostly technical, and include architecture and engineering. Pupils who have entered on the architectural stage receive a small collection of drawing materials without extra charge (so we understood); and a large series of elaborate handbooks of the various subjects have been compiled and are issued to students by the society. These do not bear the names of any known writers on the subject; they are anonymous treatises compiled specially for the Correspondence Schools, and must therefore be judged entirely on the internal evidence of their merits. Some of them are on our table, and we shall be glad to express our opinion upon them later, when we have had time to study their contents. From what we have gathered however, of the spirit in which "Correspondence Schools" is conducted, we should expect to find that the books have been carefully and conscientiously prepared. Whether teaching by correspondence on this system could be of much avail in preparation for the architectural profession may be questioned; but it may be very useful for beginners who intend eventually to enter for the profession, and who wish to get some knowledge of the subject first; and also for those who wish to study technical subjects merely in the way of adding to their general education. At all events, it seems to be a serious effort to facilitate technical education which deserves attention. The offices of Correspondence Schools are at 59 and 60, Chancery-lane.

"Watercolour Painting for Architects."

WITH reference to Mr. Forbes's admirable paper on this subject, which excited so much interest at the last meeting of the Architectural Association, we noticed that the chairman, in summing up, made the remark that in general "beginners painted far too dry," a remark which the author of the paper confirmed. As bearing on this point, we recommend those members of the association who were interested in the subject to visit the collection of watercolour sketches by Mr. A. W. Rich now on view at the New English Art Club

Gallery at 67A, New Bond-street.* They will there have the opportunity of seeing what can be done with water-colour in landscape effect by an artist who obviously does not "paint dry," but gets all his effects by broad washes laid on with a full brush. Some of the small drawings are perhaps rather too sketchy; but a large number show admirably what can be done with broad washes, and the study of them may be useful to some of those who listened to Mr. Forbes's paper.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE usual fortnightly meeting of the Royal Institute of British Architects was held on Monday evening at the rooms of the Institute, 9, Conduit-street, W., under the chairmanship of the President, Mr. T. E. Collcutt.

Deceased Members.

Mr. Alex. Graham announced the decease of Mr. George Allen Mansfield, of Sydney, New South Wales, elected a Fellow in 1873; of Mr. Frank Garfield Johnson, elected an Associate 1882; and of Mr. Daniel Robt. Dale, elected a Fellow in 1852. Mr. Dale was for many years the District Surveyor for West Streatham, and fortunately for him was elected to the position under the Metropolitan Building Act of 1855, which permitted a practising architect to act also as a District Surveyor. Mr. Dale was a very active man in municipal matters, and was a member of the Court of Common Council and served on several Committees, and he was well known for his activity and usefulness.

District Surveyors.

Mr. Graham said he would like to point out to the meeting that last summer a deputation from that Institute waited upon the Building Act Committee of the London County Council and urged very strongly a reversion to the old custom of allowing architects of experience, who were acquainted with every form of building construction and had full knowledge of all new building materials which came out day by day, to act as District Surveyors. He was sorry to say the London County Council did not pay much attention to what they considered was a good custom, but he believed the day would come when actual facts would be brought to light showing that practising architects of experience were the best men for the protection of the public. Mr. Dale, who had just died, was one of the few who so acted as a District Surveyor, but there were very few left now.

Mr. W. Woodward fully endorsed the view held by Mr. Graham, and said that everyone who had been in practice as an architect for many years must know that the right man for a District Surveyor was the man who had followed the profession of an architect. Not only did such a man do all that was necessary in the public interest, but as the result of experience he was able to help the architect.

New Member.

The Chairman remarked that it was usual for the Secretary to call on new members to sign the roll, but as their late Secretary, Mr. Locke, was making his first attendance he would like to take the duty upon himself.

Mr. Locke met with a cordial reception on coming forward to sign the roll.

Bangour Village Asylum.

Mr. Hippolyte J. Blanc, R.S.A., then read a paper on the "Bangour Village Asylum," of which the following is an abstract:—

In opening his subject Mr. Blanc touched upon the changes brought about in comparatively recent years in the treatment of the insane. Owing to increasing knowledge and study, the old conditions have given place to a greater measure of freedom, to careful nursing under the most perfect sanitary arrangements, and to the selection of situations for buildings having cheerful surroundings. Of the two main divisions of treatment recognised now, the first aims at restoring all the organs and functions to right use by healthy occupation and by proper nourishment; the second consists in careful observation and control, companionship, and distraction of the mind from morbid thoughts by suitable occupation and amusement; also guarding against the dangers of suicide and homicide.

The precursor of the village asylum of to-day is to be seen in the Belgian system at Gheel, where the insane are boarded out under supervision among private households. Instead of the "pavilion and corridor" type the "segregate or village" arrangement will doubtless be preferred generally for the future, as being more economical to construct, and more advantageous both for patients and for the administrator.

The estate acquired for the Bangour Village Asylum is about fifteen miles from Edinburgh and twenty-nine from Glasgow, on the same line of railway. It extends to 950 acres, the site occupied by the asylum being about 150 acres. The length of frontage along the south boundary is about 1,300 yds. The buildings are disposed in two main groups—(1) The "Medical" or "Observation," to occupy the eastern portion of the site; (2) the "Chronic or Industrial," to occupy the western. Access is obtained by a road formed from the public highway, nearly midway between the two groups of buildings. The approach is without gates, enclosures, or lodges. The nearest building, which is well within the estate, is the steward's house, and, continuing, are the power-station and workshops, the bakery, stores, and kitchen; also the washhouse and laundry, these being grouped comparatively close to each other, and within 150 yds. of the boilerhouse, from which steam is supplied to them.

To the right of these on the site are the buildings composing the medical section, and to the left those of the industrial. Of the former there are already erected in a central position the administrative house, to which is attached an admission house for male and female patients—forty of each sex. These are the only buildings erected with corridor connexion. Round about these are disposed four "closed villas" for both sexes, nurses' home, and hospital. The chronic or industrial section on the western area is subdivided into two groups—one for female and the other for male patients—each having its route of intercommunication, but as groups placed widely apart. This western area has erected upon it at present five houses for male and four for female patients, with an ample space for additional homes when required. In the western area a site is retained for a small isolation hospital yet to be built, and at the extreme north-west of the site lie the farmhouse and offices. A greenhouse and very ample kitchen garden—indispensable appendages—find a most suitable site on an extensive slope south of the farm offices.

No boundary walls enclose any of the houses, nor are there fenced areas with garden walls and shrubberies to maintain. All roads and walks are open as in an ordinary village. There is throughout an absence of the character of an official institution; the appearance is rather that of an ordinary city suburb. A water supply has been introduced from an area about two miles to the west of the site, with its relative reservoir, filter beds, sluices, and water-keeper's residence. For drainage recourse was had to the excellent modern method of the septic process, the purified effluent from which is finally carried away by an adjoining stream. The septic tank and filter beds are about 173 ft. by 124 ft. over all, large enough to provide for the reception of an average of 60 gallons of fluid per day per patient. The installation is of the latest approved construction, consisting of a double-contact bed and filtration at a lower level; the resultant effluent is thus rendered perfectly clear and innocuous. As regards heating, each house is treated as a separate self-contained subject, with its own furnace for hot-water circulation and for heating. The atmospheric heating can thus be regulated according to the respective needs of each house. Each home is provided with electrical appliances for ventilation by fans, wherever special ventilation is considered essential. For all other apartments ventilation is provided by the windows. Electric current is generated on the estate. There are three boilers (with space for a fourth), evaporating 7,500 lb. of water per hour, and working up to a pressure of 130 lb. Two of the boilers are sufficient to meet the present requirements for dynamos, for the electric-lighting supply and motor power; also for the supply of steam for cooking and heating of a limited number of buildings. Communication between the different homes is provided for by an installation of the telephone.

As regards the homes, the accommodation generally consists of day-rooms, dining-room, with kitchen and servery adjoining, scullery and storerooms, lavatory, water-closets, bootroom, and cloakroom, also nurses' dining-room, all on the ground floor. On the first floor—dormitories, nurses' room, one water-closet, housemaids' pantry, bathroom. A third floor occurs in one or two of the homes where additional dormitory accommodation is required. Each home has its own kitchen and scullery for dealing with any special diet. Each home is provided with two staircases, in simultaneous use, to accustom patients for cases of emergency. Water-closets are fitted in series according to the requirements of the respective homes. The water-closet wing is in height a single story only, no occupied buildings being built over it. Each, in addition to cross-windows, has an extra shaft carried up in the main gable with electric fan for ventilation. Each home has its own bathroom containing one, two, or three baths, according to the number resident, separated by low screens, and with semi-enclosed dressing-boxes. The homes are each furnished with two boilers, one for atmospheric heating, the other for hot-water supply. All furnace chambers are sunk, and enter from the outside. A patented arrangement is adopted for the windows, which, under the Lunacy regulations, must not be opened more than 5 in. The advantage is that no mechanism whatever is visible for patients to tamper with; the sashes being equally balanced, neither ropes, weights, nor counter-check fasteners, nor rods for lowering the top sashes, are required. Moreover, by the equal opening of both sashes, a natural circulation of air is obtained. The recreation hall is provided with a large and fully-equipped stage, with retiring and dressing rooms. The hall will accommodate 700 persons, with 7 ft. super. to each. The orchestra is provided for in a roomy sunk pit in front of the footlights. For dance occasions the pit is covered over at the floor-level.

Asylums on the "segregate" principle the author considers more economical to build than those on the "pavilion and corridor" principle. The after-maintenance is also much more simple and economical. Risks of fire are minimised, and if occurring can be more easily dealt with.

Touching cost, the author gave as an approximate total the sum of 237,000*l.* for the 750 patients at present in the institution, which works out at 316*l.* per bed. There is accommodation, however, for 1,000 patients, and when full the proportion of cost would stand at 267*l.* per bed.

Mr. G. T. Hine, in proposing a vote of thanks to the reader of the paper, said he did so with particular pleasure because he unfortunately had been called in at one time with the object of marring the beauty of Mr. Blanc's design. Four or five years ago

* The exhibition was announced to close on Saturday this week; but possibly it may be kept open a little longer. At all events, there is this Saturday to see it.

when the great wave of economy first set in in the country amongst public bodies, it became bruited abroad in Edinburgh that Mr. Blanc was proposing to spend money on the wreckage of the population which might be expended with greater advantage on the useful and working classes, and he was consulted as to how Mr. Blanc's design could be amended. He would not tell what occurred, but the result of the investigation was that Mr. Blanc was restricted to an expenditure of 300*l.* per bed, and he (the speaker) was very pleased to be able to congratulate him upon not only having kept down to that expenditure, but in being very much below it, and, at the same time, if they looked at the drawings they would admit that the beauty of the designs had not been marred for a building of that class. When they considered that there were in this country alone something like 100,000 lunatics, and that they were increasing at the rate of from 2,500 to 3,000 a year, all of whom had to be provided for, and that the annual expenditure necessary for housing them amounted at the least from half a million to three-quarters of a million pounds; and when they further considered that few of these unfortunates had any appreciation of beauty in any form, they would at once agree that it was a gross extravagance to expend money on decorative buildings which in no way improved the health or comfort of the inmates. In his design for these buildings on the colony system, Mr. Blanc was one of the pioneers in this country. The villa system had been tried abroad, and perhaps the first that was ever originated was that at Alt Scherbitz, in Saxony. Since then four or five had been erected in Germany. They in England moved at a slower pace and did not experiment on undertakings of this kind with the great expense that had been incurred at Bangour, without some experience of the working of the system. In some of their asylums they had been trying it to a limited extent in a few detached villas for the better class of patients which surrounded the main buildings of an asylum erected on the old principle. Whether a complete villa asylum as designed at Bangour was going to be a success remained to be proved, but it seemed to him that in a climate like theirs, with the possibility of two or three feet of snow on the ground, it would not be always an easy matter to convey warm meals from the main kitchen to some of the outlying blocks, and he thought in a few years the promoters of the scheme in Edinburgh would probably feel they had gone a little too far. Mr. Blanc was not, however, responsible for that. He had his instructions, and had merely carried them out, and, he felt, carried them out very successfully.

Mr. W. Woodward, in seconding the motion, said the only points he differed from Mr. Blanc on was in not providing urinals and in advocating the use of closets with tip-up seats, which was a thing he abominated. He felt that the colony system was a very admirable one. A fortnight ago he went over an orphan asylum, and there he found they had adopted the system in the infirmary of subdividing the inmates instead of keeping them in a few large wards. He was convinced from that visit that the colony system was much the best.

Mr. Perkins Pick (Leicester) said that, as one who had recently some experience in asylum building, he was pleased to support the vote of thanks, but before offering any criticism he would like to suggest that discussions on papers of that sort would be much easier and more useful if the Institute adopted the practice of the Institution of Civil Engineers and sent the paper round to members who were interested in the subject a few days before it was read. He threw it out as a hint to the Council. With regard to the village system generally, he understood that Mr. Blanc was not responsible for adopting that system at Bangour, and, personally, he could not see where the advantage came in. It was all very well to show views of cottages or houses with trees around them, but when they had got a house containing thirty of forty patients it was quite a misnomer to say that they were living in village surroundings. These forty or fifty patients living in a house would soon realise that they were in an institution. They could call it what they liked, but when a number of people were aggregated together in a villa the institutional character must come into force. With regard also to the appearance, he saw no special advantage in the villa system, because when they took a view from the windows of one of the villas they saw a great mass of other buildings in the immediate neighbourhood, and, in fact, a great many more buildings than with the ordinary pavilion type of asylum for which Mr. Hine was so largely responsible. Then if they took the separation of the wards, it had now become quite the usual practice to separate them by dormitories and to keep the day-rooms a considerable distance apart. When these day-wards were facing south and each had its own garden area of probably half an acre, well planted, there did not appear to be that necessity for building separate villas which some Boards were crying aloud for. In the villa system they had to take into consideration the enormous difficulty of administration, the number of fires to be kept going instead of having one heating apparatus; the number of separate water services required, the collection and distributionpof the laundry, and stores and the food arrangements, etc. When they considered all this it seemed to him that instead of going forward they were going backward in adopting the villa system, and he could see no necessity for such a system if they had well-planned asylums on lines which had now become somewhat standardised. He thought that the Lunacy Commissioners in Scotland were a good deal easier to satisfy in those matters than the Lunacy Commissioners in England, and he would go a step further and say that the intelligence of the latter was of a higher order than of the former if the plans they had seen were to be taken as an illustration. With regard to the sanitary adjuncts, he did not consider they were sufficiently separated from the wards, nor did he think the lighting and ventilation of some of the day-rooms and dormitories good. In the illustration of one of the dormitories they had seen the light was mainly from one side, and this did not appear to be quite the best or the most sanitary arrangement. The English Commissioners would in all probability have required alterations so as to get a proper light and cross-ventilation.

Mr. Matt Garbutt said that it appeared from the opening remarks of Mr. Blanc that one of the chief reasons for the adoption of this village system was to bring the patients into more natural and more beautiful surroundings, and he was therefore a little surprised to notice that Mr. Blanc did not refer directly to the effect of colour upon the state of mind in persons mentally afflicted. He (Mr. Garbutt) had always understood that the effect was considerable. The influence of beauty was one of the leading arguments in favour of the village system, and he was therefore particularly interested in Mr. Hine's statement that people mentally afflicted had no appreciation of beauty in any form whatever. That certainly came as a great surprise to him. If it was true, then it would appear that this village system might possibly have no advantage to the patient that would compensate for its probable additional cost, and for its difficulties of administration. The difficulties of administering a lot of scattered houses must obviously be greater than managing an institution within four walls. As to matters of detail, one could not help noticing certain things in the photographs which they had seen. The little pigeon-holes in the mortuary for the bodies certainly did not appear to be a very good arrangement, although they existed in a good many London mortuaries. It would seem to be very much better if they could have simple plain glazed walls and wooden tressels that could be burned, the walls of the mortuary being absolutely clear from any sort of projection so that they could be washed down when necessary with acid.

The resolution was heartily agreed to.

Mr. Blanc, in reply, said that did time permit a great deal could be said for and against the village system. He granted that if there was no appreciation by the patients of anything that was beautiful the purpose of putting the beautiful before them was to assist in their cure. The patients were not there simply as pieces of humanity with no sense of sentiment, and when he told them that there were about 40 per cent. of cures in the year that spoke as to the naturalness of the treatment. They had had observations made about the distances to travel to the laundry. If they took a pavilion asylum they were under cover no doubt, but the outside traffic in the villa system was conducted within a very limited time, and it had not been found to give rise to the slightest inconvenience. It might be said that when snow was on the ground it would be difficult for the doctors to move about. But the idea was that the doctor should treat the village exactly as an ordinary doctor treated his practice if he were living in a village. In that case the doctor had to go out of his house to his patients in all weathers, and so will their doctors. With regard to the fires, that again was the ordinary village arrangement. The fires could easily be dealt with and were sufficiently well dealt with, and the aggregate amount of coal consumed in them was nothing like what was required to maintain a number of huge boilers which required steam, and there was always the difficulty with steam that they could not keep the pipes in a sufficiently sound condition to prevent leaking. When they got the grounds round the village well planted with trees he believed they would have a picture something like what he would wish to make it. With regard to the mortuary, he might have created a false impression by saying that the bodies were laid out in the mortuary-chamber. The mortuary-chamber was a large place about 18 ft. by 12 ft, and the bodies were laid down on slabs exactly as he had seen in other asylums. There was no timber about the place—the whole had a glazed surface. The whole of the place could be hosed—every part of it. It was an open chamber so far, with glazed partitions and with constant ventilation, and he had found on comparing it with other mortuary-chambers that it was a vast improvement.

The President announced that the next meeting would be held on Monday, March 30, when Mr. George Hubbard would read a paper upon the Cathedral Churches of Cefalo.

MEMORIAL FOUNTAIN, NEWCASTLE.—A fountain is being erected to the memory of the late Alderman W. D. Stephens, in Clayton-road, Newcastle. It has been designed and executed by Mr. William Donaldson, and bears a portrait cast in bronze. The architects are Messrs. Marshall & Tweedy, Newcastle.

HULL TOWN HALL EXTENSION SCHEME.—A Local Government Board inquiry was held by Major Stewart, R.E., at the Hull Town Hall, on the 17th inst., relative to the application of the Corporation to borrow 14,300*l.* in respect of the scheme for the extension of the Town Hall. In the course of the inquiry, Mr. Cooper, of Messrs. Russell & Cooper, the architects, stated that the firm were convinced that they could carry out the complete scheme according to the original drawings at the original estimate of 100,000*l.* Since the work was commenced, however, alterations in the original plans had been made and additional expenses have been incurred, notably in connexion with the addition of the third floor, so that, although the architects could have carried out their original plans at 100,000*l.*, that amount will no doubt be increased by the expenditure on the additional work carried out upon the instructions of the City Council.

RADCLIFFE TOWN HALL COMPETITION.

THE drawings for this competition, fifty-four sets, were on view in the public library from Monday, 9th, to Friday, 13th inst.; the award we have already published in our issue for March 6. The Report made by the assessor, Mr. G. H. Willoughby, F.R.I.B.A., of Manchester, which was published in the *Radcliffe Times* of March 7, contains a list of points to be striven for, which, in his judging, he had kept steadily before him as being essential to securing the best and most suitable scheme.

With two of these points we find it impossible to agree. Firstly, that the structure should be brought up to the building-line on all sides without breaks, so as to obtain as large areas as possible.

Secondly, that the building should be designed for execution in a Ruabon brick and faced with polished stone dressings (sparingly used). "Having ample window fenestration, preferably square-headed, glazed with plate-glass in large sheets, and entirely free from any subdivision by the introduction of small wooden bars, leaded lights, or other superfluous and expensive embellishments, in a smoky atmosphere like Radcliffe, which is very susceptible to the retention of dust and dirt, consequently these are distinctly out of place."

The first of these requirements puts out of court the only two plans submitted which could claim to be architectural as well as possessing the minor conveniences which mark the four premiated schemes. The site is an irregular one, the two longer sides on Spring-lane and Mather-street being slightly converging; the third side, on Water-street, instead of being at right angles to either of these, is at an obtuse angle with Spring-lane and an acute angle with Mather-street. By the simple expedient of cutting off this acute angle (at a small sacrifice of land) a symmetrical shape can be obtained with two long sides converging towards a shorter side. This shape has been used by the two above-mentioned competitors with great similarity of result; placing entrances on the axial lines from Spring-lane and Mather-street, meeting in a central Hall, with main stairs leading up to the Council Chamber, the most prominent room in the building, as the centre of the Water-street (the narrower) frontage. The Spring-lane and Mather-street façades are similar (Mather-street not being treated as a back street), and the Police-court, as in all the other designs, forms the base of the truncated isosceles triangle. Here, then, is the making of an architectural plan of true and convincing directness in its main lines, into which the smaller offices can be fitted by a little careful adjustment by any one who has an ability for Chinese puzzles; not designed on the usual slipshod English method advocated by the assessor of "bringing the structure right up to the building line on all sides," outlining all its deviations and quirks, with corridors following suit at a depth of one room back from the outer face of the building.

The scheme of Messrs. Bradshaw & Gass (Bolton), one of the two "architectural" plans, is disappointing in elevation; if the angle pavilions had not been so piled up and the whole design a little more cultivated and in better style, this would have been the best scheme submitted.

Mr. Claude Patterson's (Manchester) plan, on exactly similar lines, fails in one or two minor particulars, such as the main staircase being used for the public gallery to the Council Chamber, but these could easily have been altered. The elevations, however, fully express the plan, the Council Chamber being duly emphasised by a wide pediment, and the whole design is worthy of the traditions of the quiet architecture of our smaller towns during the XVIIIth century. If the assessor had selected this design, we should have felt that the cause of architecture had been helped forward in the Manchester district.

The second requirement as to material, which we objected to in the assessor's report, appeared also in the conditions (drawn up under the assessor's supervision), and we think it highly unnecessary to tie down competitors to the exact use of material. The remark about the window-bars, besides voicing an exploded prejudice, which is bad enough to survive in a layman, let alone in an assessor, strikes us as altogether too small a matter to hinge the deciding of a competition upon. It is true the winning design happens to have omitted bars in the windows, but the same unfortunate result might be obtained by a footnote on any of the other schemes submitted. We maintain that the showing or not of bars is not a point of competitional merit.

The position of the Council Chamber is always a debatable point, and the assessor does not seem to have set his mind definitely in favour of any one position; in the winning design it is set back from Mather-street, in the third it is on Mather-street, and in the second and fourth it is on the Water-street front. We do not think that in a small town of this sort it is necessary to hide it away for fear of noise. Double windows will do a good deal, and the value of having the most important room in a building on the principal front is obvious for reasons of architectural fitness.

Turning to the designs which were placed by the assessor, Messrs. W. M. Gillow (Manchester) and R. Holt (Liverpool) were awarded first premium, 150*l.*, which is only to be paid to them if the building does not go on—another way of saying that the first premium is merged in the commission. The plan is direct and simple, and conforms with most of the requirements which the assessor set himself. The two areas are larger than those of anyone else, but this is obtained not by more compact arrangement but by consistently smaller rooms in all the departments. No actual sizes were given in the conditions, so we imagine that this scheme gives all the accommodation that is wanted, with the result that the cubical contents (318,000 cubic ft.) is low, and the building should easily be erected for 12,000*l.* Some of the rooms, however, strike us on the face of it as being too small: the Education Office, 15 ft. by 12 ft. 6 in., and the Committee-rooms, 20 ft. 6 in. by 15 ft. In the Police-court we think the witnesses and solicitors should not have been cut off from the magistrates by the court, and a separate door would be desirable for the Sanitary Department. In one important point this scheme goes directly counter to the assessor's requirements, that "all water-closets, lavatories, etc., to every floor should be arranged *en suite* one over the other." A Committee-room is placed over a ground-floor sanitary block, and the lavatories to the Council Chamber do not come over lavatories below, and are unsuitably placed in themselves. It is interesting to note that the assessor, after implicitly commending this design for omitting the expensive "embellishments" of window-bars, recommends the author to temper the severity of its architectural treatment by "a few architectural features which might (at a trifling expense) be introduced with advantage." It would be instructive if the assessor would draw up a list of cheap architectural features which one might tack on to any building, and if they could be ordered ready-made from a catalogue it would save a deal of trouble in the designing. The frontages to Spring-lane and Water-street have been carried round consistently, but on arriving at the Mather-street front the authors seem to have broken down altogether, and there is a composition consisting of five irregular and various shaped blocks without any coherence or attempt at grouping, picturesque or otherwise.

The second and third premiated schemes (Mr. D. Bird, of Manchester, and Mr. H. Lord, of Manchester) have little to recommend them, except the lowness of their cubes. The second is poor on elevation, and on plan the corridors are ill-lit. The third contains an unnecessary tower carried on nothing, and a foolish attempt at symmetrical planning by balancing a semicircular stair on one side of a main corridor with a circular apse to the lavatories on the other, though this apse can nowhere be seen except from the inside of an area.

Messrs. Gilling & Moorhouse (Liverpool) sent in a scheme, placed fourth, which seems to us better than either of the two former, and in many ways better than the winning design as the accommodation appears more adequate. The elevations also are distinctly better.

In all these premiated schemes the plans entirely occupy the site (with the exception of areas) and produce designs in which more or less of convenience is their sole merit.

Radcliffe is situated about seven miles north of Manchester, and the competition was limited to Lancashire architects.

NOVEL METHOD OF BRIDGE ERECTION.

ACROSS the northern branch of the Göta Elf river, near Gothenburg, a railway bridge has recently been erected in a manner which deserves notice for its originality. The bridge includes a swing span of 155 ft. (47·18 metres) and a fixed girder span of 281 ft. (85·61 metres), as shown in Fig. 1. The swing span was erected in the ordinary manner, but owing to the great depth of water which rendered difficult the construction of falseworks, and to dangers to which staging would have been exposed during the winter season, the fixed span was assembled on the bank of the river and transported bodily to its required position as described below.

The girder was built up on the left-hand side of the river on the site indicated in Fig. 1, one end being supported on the abutment pier by means of the supplementary members and pivot shown in Fig. 2, the other end resting upon a masonry wall,

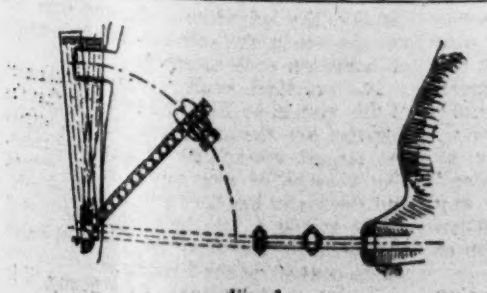

Fig. 1.

Fig. 2.

and timber trestles affording intermediary support. In order to facilitate the removal of the girder after completion the end of the span was placed upon steel rollers.

When the girder had been built up a short wide dock was cut into the bank of the river near the masonry wall carrying the end of the span (see Fig. 1), the dock being of such dimensions as to provide for the reception of three lighters connected by timber framework designed to take the free end of the girder. The lighters were ballasted with water so as to permit them, with their connecting framework, to pass beneath the bottom chords of the girder.

Having brought the lighters into position the engineers moved the outer end of the girder along the masonry wall until it was over the floating stage. Then water was pumped from the lighters until the free end of the girder was lifted from its support.

The lighters were next hauled by a steam tug in the direction shown in Fig. 1 until the end of the span was brought immediately above the river pier built for its reception By letting water into the lighters the girder was gradually lowered upon its bearing, and the only operation remaining to be performed was the removal of the pivot at the other end and the substitution of permanent supports between the abutment pier and the bottom chords of the truss.

It is stated that the operation of swinging the span into place occupied only forty-five minutes, to which must be added one hour for lowering the end upon its support. The weight of the girder was about 360 tons, the proportion of this load carried by the lighters being about 200 tons.

PUBLIC LIBRARIES.*

"ALTHOUGH it is nearly sixty years since the passing of the Public Libraries Act, and most towns have one or more buildings devoted to this purpose, no typical plan or design has been evolved, and the problem has in each individual instance to be solved anew. This, no doubt, is partly due to the extraordinary sites which in very many cases our public bodies give us to deal with, sites with every possible disability and difficulty, and which at first sight generally appear to be hopelessly inadequate for the purpose. Taking everything into consideration, I think we may congratulate ourselves that the result is as good as it is in many cases. It is, however, in my view, a matter of great regret that our ingenuity and ability should be taxed in this way, and that we are not able to devote the whole of our energies to evolving a really fine and architectural scheme.

Some day perhaps in the distant future we may hope that there will be a wider and more general appreciation of architecture amongst the public, which will lead them to consider when initiating schemes for great buildings the value and importance of entourage, ample space, etc.

I do not, however, wish to be unjust to our public bodies, who labour under many difficulties, such as the limitations of the penny rate, the opposition of a large section of their constituents, etc. I believe that as time goes on and the educational value of public libraries is more generally recognised (as it inevitably will be when some of the faults of administration have been corrected by experience) some of these troubles will disappear.

The difficulty, however, with which we are all so painfully familiar, and one which we seem doomed never to escape from, is that of providing the accommodation required for the limit of expenditure stipulated. It is quite an extraordinary fact that these two conditions never, by any chance, bear the remotest relation to one another, and it is to be regretted that public authorities do not seek in some measure to regulate their requirements by their means. I think that in very many cases the size of the lending library might be much less than is commonly asked for, especially if it is supplemented by an adequate stackroom where books may be stored very economically. The number of volumes in a lending library does not increase indefinitely, as a large proportion of the books, particularly fiction, becomes out-of-date from time to time.

The reference library also is in many cases oversized. Except in special districts it it very unusual for this room to be occupied by large numbers at a time, and a very large room is therefore unnecessary for the readers. To attempt to house all the reference books in this room is a very wasteful arrangement, as they may be much more economically placed in a stackroom adjoining, with a small number of such books as may be in greatest demand arranged around the walls of the library itself.

In a paper I read last year before the Royal Institute of British Architects I suggested a more economical type of plan than that usually employed, and I venture to lay it before you this evening. The idea embodied is to abolish all entrance-hall, corridors, etc., and to enter direct into the reading-room, which it is proposed to treat as a large hall with an open roof, thus giving ample air and floor space. The lending library is arranged as a recessed portion of the same room, and the juvenile and reference libraries open out of it. This gives the most complete and perfect supervision with a minimum of staff, and the only objection which I have heard made to it is the possible disturbance of readers in the general reading-room. I am of opinion, however, that this would not be the case. The room would only be occupied by readers of newspapers and magazines, neither of which require very close study and attention, and in any case there is always constant movement going on in a reading-room. All that I think would be necessary would be a wider spacing of the furniture and ample gangways.

I believe that a library planned on these lines would be economical, and it would certainly lend itself to an architectural treatment.

The movement in favour of what is known as the "open access" system has been steadily gaining in strength for several years, and there appears to be some prospects of its entirely superseding the "indicator" system eventually. The advantage of the system consists in the readers being able to handle and choose their own books and to ascertain with certainty that they have the book they require by personal examination. From the architect's point of view the problem of the lending library is entirely altered, and in some respects rendered less difficult. With the indicator system a large public space is required, with a very considerable length of counter on which to place the indicators, and it is essential that both the front and the back of these should be well and clearly lighted either by windows or roof lights. This is in many cases extremely difficult to arrange satisfactorily, and is probably the point in which library plans most generally fail. When open access is adopted the problem presents itself in a much less acute form. The counter is placed close to the ingress and exit, and should be in a fairly good light, but it does not require the extreme length needed for indicators, and may take a rectangular or semicircular form. It is, however, desirable that the bookstacks should be so arranged as to be under easy supervision by the staff, enclosed within the counter, and they also require to be much more widely spaced in order to give the public easy access to them—a space of 5 ft. or 6 ft. clear between them being necessary as against about 3 ft. 6 in. with the "indicator" system. The result of this is that any saving in space obtained by the omission of the public space in front of the counter is neutralised.

The most favoured system of arranging the bookcases for an open access lending department is to radiate them from a central point within the attendants' counter, and this at once suggests a semicircular room; a very good and satisfactory plan where the site allows. This, however, is frequently not the case; and when a rectangular room is imperative I think it is a mistake to attempt the radiation of the bookstacks, as it has a very ragged and unsatisfactory appearance, and leads to great waste of space. It is easy to exaggerate the importance of the staff being able to see into every corner of the room wherever they may be. They have their own duties to attend to, and cannot continually have a watchful eye on their borrowers. The best and most effective supervision is exercised by the public over one another.

And here I should like to say a word or two on this question of supervision. It was until comparatively recently considered essential that the whole of the staff should be placed in a central position, with the various public rooms grouped round them, and thus "supervised." It is, however, now pretty generally recognised that this is impossible, and that if efficient supervision is desired there must practically be an attendant of some sort in each room. This does not really involve an increase of staff, but rather a different distribution.

As to the comparative advantages of the indicator and open-access systems, I do not feel competent to speak, for librarians themselves are at daggers drawn on the subject, and it is practically impossible for an outsider to arrive at a reliable conclusion. Open-access does, however, appear to increase enormously the popularity of a library, and the only valid argument I have heard against it is the loss of large numbers of books by theft. Whether this really is the case or not I am unable to say, for both sides quote unimpeachable statistics in support of their views; and one is rather impelled to the conclusion that it may be purely a question of how well or ill the library may be managed.

Perhaps the most cogent argument put forward by the opponents of Free Libraries has been the encouragement they give to the "loafing" element; and one cannot avoid admitting that there has been considerable justification for it.

The only room of a library, however, where this can take place is the newsroom, and it is this room which attracts the most undesirable class of readers. Recognising this, Mr. Duff Brown, the Librarian of Islington, proposed the drastic measure of entirely abolishing the newspaper-room, and this has been carried into effect in the new libraries which have recently been erected in that borough. At first sight it appears somewhat of an anomaly that a public library should have no newspapers; but when it is considered how cheap the modern newspaper has become, so cheap that the poorest may buy a copy; and also that the newsroom, when there is one, requires to be very large and most expensively furnished, it may well be asked whether such a large expenditure is justified. Surely the available funds may be more profitably expended on forms of literature less ephemeral than the ordinary newspaper.

Perhaps the only legitimate need for newspapers in a library is for the use of those seeking employment, and to meet this it is the custom in the Islington libraries to display the advertisements cut from the newspapers in the entrance-hall for a couple of hours on each morning.

The practical result of the establishment of this system at Islington has been that the libraries are the most popular and attract the largest attendance of any in London. The absence of newspapers is not noticed and the loafer has been entirely eliminated.

The system is worthy of the most careful consideration and investigation of all bodies which control public libraries.

A very useful adjunct to a library, if it

* A paper read by Mr. H. T. Hare before the Liverpool Architectural Society on February 3.

is to be regarded as an educational centre, is a lecture-room, in which topics of a literary nature may be discussed, and which may be let for the meetings of literary and scientific societies. This room is usually placed on an upper floor, and should be amply lighted, and approached both from the general staircase of the library, and also by a special staircase and entrance arranged for the purpose, so that the room may, if occasion require, be used entirely independently from the library proper. The room should have provision for the proper placing of a lantern, if possible, in a small ante-room outside the lecture-room with a hole through the wall for the lens. This enables the mechanism of the cinematograph to be operated without disturbing the meeting. The end of the room opposite the lantern should have a plain plastered wall painted white to form a field for the pictures.

Top-light is the most suitable for this room, in order to allow as much wall space as possible for exhibitions which are occasionally held.

The juvenile room is a department which has been much neglected in English public libraries. In many cases it is provided, but has been managed in such a way as to be rather a nuisance than otherwise. This, however, appears to me, if properly organised, to be one of the most valuable and important of the provisions of a library. If the love of reading and study can be instilled into children, and their tastes and inclinations can be guided into proper and healthy channels, surely a most excellent work has been accomplished. This cannot, however, be done without something more than mere supervision. There must be someone in attendance who can talk to the children and give them short and interesting discourses on books and reading. I believe this has been customary in American libraries almost from their initiation and with the greatest possible success.

Something of this nature has been established in the Islington libraries. A large room is provided, part of which is partitioned off by a screen and arranged as a small open-access lending library, the rest of the room being filled with reading-tables. A most effective decoration has been provided on the walls by a series of coloured prints of historical subjects. These rooms have been so popular that it has been a matter of some difficulty to regulate the attendance to the capacity of the rooms, and I am told numbers are daily unable to find accommodation.

This room should be arranged as nearly as possible to the main entrance, so that the children may pass into their room with as little disturbance to the rest of the building as possible. It is doubtful whether it is desirable to provide a special entrance for children as this involves special supervision: though it may be done with advantage in some cases when the use of the room is intermittent. This, however, together with many other details of arrangement, is a matter to be discussed with those who are to have the management and control of the building.

I may perhaps say a few words with regard the construction of library buildings generally, though there is really little of a special nature. The building must, of course, be a fire-resisting one, as indeed every public building should be nowadays. As cost is such an important element, the system of construction will require careful consideration, especially in these days when there are so many patent systems thrust upon us, each one claiming to be the best and cheapest ever conceived. My experience in this connexion has been that there is no system so effective and inexpensive as ordinary steel joists and breeze concrete forming a solid floor, plastered on the under surface, and the upper surface finished with cement to a smooth face, on which is laid linoleum fixed down with mastic composition and wax-polished. This floor will be found to be sufficiently sound-proof when covered with linoleum or cork carpet.

The whole of the joinery should, if possible, be of hard wood, polished, this being the most economical from the point of view of maintenance. The first cost is certainly more than painted work, but the excess is so little that few public bodies will hesitate to incur it.

The heating and ventilation are also very important considerations, particularly the latter. Here again cost will preclude the use of any very costly scheme, and one is practically limited to a low-pressure hot-water system as being the most economical both in first cost and upkeep. One of the most serious difficulties in the application of the system is the disposition of the radiators or other heating surfaces in the rooms so as to avoid interference with fittings and furniture. In many cases practically the whole of the wall space is occupied by furniture, and as radiators of the ventilating type should be fixed against outside walls if possible, special arrangements are necessary so that the incoming air may have free access to the rooms without impinging upon wooden fittings. In lending libraries and stack-rooms the difficulty is still further accentuated by the fact that the walls are covered by bookcases to a height of 8 ft., and it is practically impossible to use radiators at all. In these cases, I think the best method is to use continuous pipes fixed in a space about 18 in. high under the bookcases with fresh-air inlets at intervals. The front is covered by movable gratings, and the lowest shelf or bottom of the book cases protected from heat by some non-conducting material such as "Uralite."

Sufficient inlet ventilation in the reading-rooms may be obtained through the radiators, and the extract is best arranged by an electric fan fixed in a chamber or turret at the roof level. If the main shaft leading to the fan is of sufficient height, it will be found in most cases that the system will be generally automatic, and that it will only be necessary to work the fan on special occasions when the building is crowded or the external atmosphere heavy.

With regard to the external design of these buildings it is, of course, impossible to generalise. They are public buildings, and as such should possess a certain amount of dignity and public character, combined, if possible, with an expression of the educational purpose they serve. Each individual architect will take his own view as to how this may best be accomplished, and will impress his own individuality on his work.

In conclusion, there are few problems with which we have to deal which present so many difficulties, and few which so well repay the time and trouble required for an entirely satisfactory solution."

THE ARCHITECTURAL ASSOCIATION SPRING VISITS.

V.—NEW OFFICES, LONDON, EDINBURGH, AND GLASGOW ASSURANCE COMPANY.

PROFESSOR BERESFORD PITE attended the fifth spring visit of the Architectural Association on Saturday, 14th inst., at the new offices of the London, Edinburgh, and Glasgow Assurance Company, Euston-road, W., and gave an excellent discourse to the members, limited to fifty for the occasion, upon the work which he had recently completed.

London has been enriched of late by the erection of large public buildings for Insurance and Friendly Societies. As a rule, the Company utilises but a small part of the structure for its own purposes, and seeks to gain some return upon its outlay by letting off portions of the premises for shops and offices. In the present instance, however, the whole building is occupied by the Society, which has raised a fine monumental work to meet its needs and to reflect its flourishing condition.

Very astutely Professor Pite has seized upon the Greek character of the larger buildings in the immediate neighbourhood and modelled his classic pile upon that tradition. The detail is free from actual archæology, and is conceived in a manner intensely original yet harmonious; a study of the drawings exhibited at the visit shows the extreme care with which the design has been worked out. The skilful placing of parts, the modelling of masses, the maintenance of interest, are all elements which declare themselves, upon an examination of the composition, to be the outcome of great study.

The building, although conforming to architectural precedent, is thoroughly modern in its arrangement, its lighting and general fitness. It assumes an L-shaped plan, with important frontages to Euston-square and Euston-road. It occupies the site of somewhat small domestic buildings, but now rises to a considerable height, accommodating five floors for the offices and a top story for caretaker, with staff dining and recreation rooms. Three staircases are introduced for business and escape convenience. The board-room and private offices are on the first floor, and the remainder of the large stories is taken up with clerks' offices.

A refreshing aspect of the work is the directness of the construction. The external columns carry stone lintels which receive considerable weight. Walls of County Council substance have commendable mural functions to perform. The dignity of Portland stone was never more upheld than in this fine tribute to the gods of Greek architecture. The modern steel influences have been exorcised, save in the concrete floors.

A variety of interest is seen in the interior decoration. The main entrance-hall walls are faced with bands of green-and-cream faience; the chimney-piece, of the same material, has the arms of the three cities from which the Society derives its title. The mosaic floor of the same apartment is a Zodiac design in black and white. The glorified modillions in the ceiling are, however, somewhat difficult to fathom.

Some excellent coloured glazed brickwork on the staircases and tile linings in the offices are notable features of the working parts. The staircases in oak, a welcome restriction of the Building Act, are treated with quite a Greek spirit, while the oak panelling and doors of the board and other rooms are charming and restrained.

The scheme is one which will probably be extended on the Euston-road side as soon as the properties, already in the possession of the Company, are free for development. Professor Pite exhibited a sketch of the general intention of the completed idea from which it was readily seen that the final work will be one of great importance.

The visit was valuable in every way, and perhaps the lesson of the occasion was to emphasise the necessity of a thorough working-out of a design to produce a building ranking as a work of architecture. Not the least interesting part of the afternoon was the digression into the history and evolution of early classic forms by the architect. In conclusion, a word of praise must be bestowed upon the contractors, Messrs. Foster & Dicksee, for the excellence of their work.

ENGRAVINGS AND BOOK SALES.—In the sale on March 11 at Christie's rooms of the library of the late Mr. T. H. Ismay, of Dawpool, Co. Chester, and of other collections, were included G. Ormerod's "History of the County Palatine and City of Chester," 1819, with several hundred extra views and drawings—15*l.* 10*s.* (Howard), and Holbein, "Portraits of Illustrious Persons of the Court of Henry VIII.," 1792, being part of Chamberlaine's edition, with ninety portraits—42*l.* (Rawlings); A. Watteau, "Figures de différents Caractères de Paysages et d'Etudes Dessinées d'après Nature," 1735, 350 numbered plates (four wanting)—120*l.* (Bihn); a collection of forty-five engravings after Boucher, Natoire, and others, bound in red morocco, and bearing the coat-arms of Mme. de Pompadour—90*l.* (Pearson); and A. Pluvinel's "Maneige Royal," Paris, 1623, with the coat-arms of Louis XIII. on the binding—30*l.* (Quaritch).

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PEVENSEY CASTLE.

With the sanction and approval of the Duke of Devonshire and his tenant (Mr. William Elphick) excavations were carried on during two winters in the Roman portion of Pevensey Castle, which is one of the most interesting ruins in all England. The finds included the remains of timber-piling, fragments of pottery, and other articles, including a Roman tile stamped with the letters :—

HON. AVG.
ANDRIA.

The letters are stated to form abbreviations of the words "Honorius," "Augustus," and "Anderida." The first two words refer, of course, to the Emperor Honorius, Anderida is the ancient name of Pevensey. The Castle, which is to be the scene of a pageant this year, appears to have been deserted and allowed to fall into decay soon after the accession of Henry VII. The destruction was hastened by the wholesale spoliation to which it was subjected. For example, in the first year of the reign of Queen Elizabeth (1558) the lead was stripped from its roofs and taken to Lord Dacre's house at Hurstmonceux. One James Thatcher appropriated no less than 677 cartloads of worked stone for the building of his house at Priestawes. In 1591 (in the thirty-third year of the reign of Elizabeth) the Receiver of the Duchy of Lancaster reported that the castle was in great ruin and decay, and that the stone thereof was being daily "imbeselled and carryed awaye." At the present time further excavations are in progress under the direction of Mr. Harold Sands, F.S.A., and Mr. Duncan Montgomerie (of the "Victoria County Histories" staff), assisted by Mr. John E. Ray (Bexhill); and the work is confined to the mediæval portion of the castle, the main object being to trace the foundations of the early Norman keep, which was built in the reign of William the Conqueror.

There has long been a great heap of accumulated *débris* encumbering the eastern side of the courtyard of the castle, and previous writers have always assumed that there was thrown up a great mound on which was erected a shell keep similar to the one at Lewes Castle; but the present excavations have conclusively demonstrated the incorrectness of this supposition. They have disclosed the foundations of a large rectangular tower some 83 ft. long by 60 ft. wide. The walls were about 13 ft. in thickness. Instead of the usual corner turrets there are the remains of no less than three large apsidal projections, the design of which appears to have been copied from one of the existing Roman towers (at the south-east angle), which has been incorporated into the structure. The northern of these apsidal projections has been laid bare, and ground plan of the keep made clear; the excavators have dealt with three sides of it and are now dealing with the fourth or eastern face. The base of the keep was from 10 ft. to 12 ft. below the existing level of the ground. Within the castle only considerations of expense prevented the complete exposure of the original foundations, as the masonry is in excellent preservation. It consists partly of facings of green sandstone (from the old quarries near Beachy Head) and Caen stone, the core or inner portion of the walls being of flint rubble. The interior of the keep appears to have been filled at some period after the erection of the building with tough yellow clay, to a depth of 20 ft. to 25 ft.; but why this thould have been done it is not easy to understand. The clay is the same as that which underlies the Roman castrum, and the upper surface shows distinct traces of burning in several places where the ground has been opened out.

The eastern wall of the keep—where it abuts on the Roman tower—has been almost entirely destroyed by slipping; huge pieces of masonry lie in confusion on the slopes below. Hence it can be readily imagined that the task of recovering the plan of this side is one of peculiar difficulty.

Provided that sufficient funds are forthcoming, it is proposed to re-excavate the site of the chapel, the rear face of the great gates, and the basements of the towers, including their porch-like entrances. It is also intended to uncover the foundations of the great hall and other domestic buildings, in order to trace their plan.

THE ARCHITECTS' BENEVOLENT SOCIETY.

The annual general meeting of the Architects' Benevolent Society was held in the rooms of the Royal Institute of British Architects, No. 9, Conduit-street, W., on Thursday last week, the President, Mr. T. E. Collcutt, presiding.

The minutes of the previous meeting were read and confirmed and the annual report and balance-sheet were read, and, on the motion of the Chairman, adopted. The report was as follows :—

The Council, in submitting their Fifty-eighth Annual Report, have to record that the number of necessitous cases which sought the assistance of the Society was not so great as that of last year. The unfortunate circumstances of the majority of the applicants have been largely due either to the advance of age or ill-health. The rules of the Society forbid publicity with regard to individual cases, but it is a sufficiently established fact in architecture, as in other professions, that it is extremely difficult for a man who has arrived at middle life, and whose practice has fallen off, to find employment in a subordinate position. And some of the saddest cases which come before the Council are due to this cause. There are also cases where the professional man has not been in a position to provide for those whom he has left behind—the cases of the widow and the orphan in poor circumstances. Here, again, the timely help of the Society has been of the greatest value. The circumstances of each case are investigated by the Council and assistance granted in proportion to the needs of the applicant, and applied in a manner most likely to reinstate him or her in an independent position. Out of seventy-one applications received during the year sixty-five were found deserving of assistance, this number comprising thirty-seven architects and architects' assistants, fifteen widows, and thirteen orphans. In addition to these ten pensioners received their usual payments. The total amount thus distributed in relief was 918*l.* 5*s.*

With regard to the financial position of the Society the Council regret that the amount received in subscriptions was only 658*l.* 19*s.* 6*d.*, as against 683*l.* 13*s.* received last year. At the end of the year many subscriptions were in arrear, and six members had withdrawn their subscriptions. Although the number of subscribers has increased within recent years, it is still small as compared with the number of practising architects in the United Kingdom, being not more than 10 per cent. of the whole. The Society has always largely benefited by the individual effort of its members, and it is felt that with more systematic help in this direction, the finances would be gradually established on a firm basis.

The total amount received in donations was 169*l.*, as against 344*l.* 9*s.* 2*d.* received last year, including a donation of 45*l.* received from the executors of the late James Toleman. Further sums were also received from Mr. John T. Christopher (15*l.* 5*s.*), Mr. John Borrowman (10*l.* 10*s.*), Mr. Alfred Saxon Snell (10*l.*), Mr. Graham C. Awdry (10*l.*), Anonymous (per the President) (10*l.*), Miss Mabel E. Taylor (5*l.* 5*s.*), Mr. E. W. Allfrey (5*l.* 5*s.*), Mr. R. F. Vallance (5*l.* 5*s.*), and various sums in smaller amounts. In consequence of these donations and the balance carried over from last year the Council were enabled to increase the investments by the purchase of 258*l.* 7*s.* 9*d.* New Zealand Three per Cent. Inscribed Stock at a cost of 220*l.*

It is with great regret that the Council have to record the death of Arthur Maryon Watson, Mr. T. Barnes Williams, Mr. George Saunders, and Mr. John Smith.

The following gentlemen, being the five senior members, retire by rotation from the Council :—Mr. H. L. Florence, Mr. G. B. Bulmer, Mr. F. W. Hunt, Mr. W. L. Spiers, and Mr. Arthur Ashbridge. To fill the vacancies caused by these retirements the Council have the pleasure to nominate Mr. Wm. Dunn, Mr. Henry T. Hare, Mr. Benjamin Ingelow, Mr. Henry Lovegrove, Mr. Rowland Plumbe, and Mr. William Woodward. The Council have also the pleasure to nominate Mr. William Glover and Mr. Edwin T. Hall as Vice-Presidents.

The thanks of the Society are due to the Royal Institute of British Architects for office accommodation and for the use of rooms in which to hold their meetings.

On the motion of the Chairman a vote of thanks was accorded to the retiring members of Council, *i.e.*, Mr. H. L. Florence, Mr. G. B. Bulmer, Mr. F. W. Hunt, Mr. W. L. Spiers, and Mr. Arthur Ashbridge.

Mr. J. Macvicar Anderson then moved, and Mr. Scammell seconded, and it was agreed, that the following gentlemen be elected as members of Council, *i.e.* :—

President, President of the Royal Institute of British Architects, Mr. Walter Emden, Mr. Reginald St. A. Roumieu, Mr. H. Chatfeild Clarke, Mr. A. Saxon Snell, Sir Henry Tanner, Mr. Lacy W. Ridge, Mr. J. T. Christopher, Mr. J. Douglass Mathews, the President of the Society of Architects, Mr. Wm. Dunn, Mr. Henry T. Hare, Mr. B. Ingelow, Mr. H. Lovegrove, Mr. Rowland Plumbe, and Mr. Wm. Woodward.

Mr. H. Chatfeild Clarke moved that Mr. Wm. Glover and Mr. Edwin T. Hall be elected as vice-presidents.

Mr. H. Lovegrove seconded, and referred to the small amount received in subscriptions. There were many rich architects who did not assist this deserving Society.

The motion was agreed to.

Mr. Chatfeild Clarke then moved that a vote of thanks be accorded to Mr. W. Hilton Nash for his services as Hon. Treasurer and that he be re-elected in that capacity. He said it was a disgrace that the Society was not better supported. If members of the profession heard the tales told to the Council he thought they would give more than they do, and he thought there must be some means of getting more help. Would it be possible to help men by helping them to insure their lives for an annuity to commence at, say, sixty-five years of age? That was done in a society he was connected with.

Mr. Lovegrove seconded, and asked if the Council had considered the desirability of holding a dinner on behalf of the Society.

The motion having been heartily agreed to, and a similar motion having been heartily agreed to in the case of Mr. Percivall Currey, Hon. Secretary,

The Chairman read a letter from Mr. Plummer, President of the Northern Architectural Association, in which the writer promised to increase his subscription.

The Chairman said he hoped that the precedent might be followed by other members of the profession. He was much surprised to learn that only three-fifths of the subscriptions to the funds of the Society came from members of the Institute, and the constant appeals which had been made to the profession had met with a very poor response. He suggested that some members might be able to increase their subscriptions—*i.e.*, guinea subscriptions might be increased to a guinea and a half, and two guineas might be increased to three, and if that were done it would help the Society very much and they would be very grateful. They had two lady members of the Society, and they distinguished themselves by giving handsome subscriptions, and he hoped that gentlemen would distinguish themselves in the same way. It had been suggested that on the election of Fellows to the Institute of Architects they might be invited to give a donation to the Society. At one time it was the custom that when members were elected as Fellows they should give a donation to the Institute or read a paper before it, but the practice had become a dead letter, and if it could be revived and made to benefit the Society it would be a good thing. It was an honour to become a Fellow of the Institute, and a man at such a time might feel generously disposed towards such a Society. The Society assisted about eighty people last year, but the average amount given was only about 12*l.*, which was very small for a Society like that. The majority of the subscribers were London architects, but he appealed for help not only to London men but to those in the provinces as well, for the Society existed not for London alone but for the United Kingdom.

Mr. E. T. Hall suggested that an appeal should be made to contractors, big merchants, and others who were always ready to help those in distress. That might broaden the basis of help and might result in valuable assistance being afforded. Judging from the inadequate subscriptions and help received, he could only think that members of the profession were not aware of the Society, and that was because the Society was only intermittently before the profession, and he suggested that a strongly-worded appeal in the form of an advertisement should be inserted every week in the professional papers which, he felt sure, the proprietors would insert free of charge in the circumstances. From such a strongly-worded appeal, which should make those who read it feel compelled to help, they should get a good response. As to the dinner, good results were obtained in that way by other societies, but he did not think

they were a sufficiently big body to act on the suggestion, but the idea might be acted on in connexion with the dinner of the Royal Institute of British Architects. Subscriptions might then be appealed for, and little slips of paper could be sent round, inviting help from each person present. As to Mr. Chatfeild Clarke's suggestion as to insuring for persons, that was, so far as he knew, done only in the case of employees of large institutions. He did not see how the Society could do anything of the kind, because if they did, and subscribed half the money, as suggested, people would insure through them instead of through the offices. He thought that the Chairman's suggestion was a good one that men who were elected to the Fellowship should be invited to assist the Society, and he thought the suggestion would be a popular one. Even if men did not assist, at least their attention would be called to the existence of the Society, and that would be an advantage. The cases which came before the Council were of a heartrending character. In one case a gentleman who had been mayor of his town on several occasions was compelled to seek the aid of the Society, and there were many cases of men who were too proud to ask for help, but who were in great need of it.

The Chairman said that Mr. Hall's suggestion as to sending round slips of paper at the Royal Institute of British Architects' dinner, giving information about the Society, might go forward from the Society to the Institute. As to the suggested appeal to the general public, a similar suggestion had been made before, but the feeling had been against it, as it was felt that if architects responded as they should respond there would be sufficient funds to deal with all cases. But Mr. Hall's various suggestions would be carefully considered by the Council.

Mr. Currey said that the *Builder* proprietors very kindly gave 5*l.* worth of advertisements to the Society every year.

The Chairman said that the annual subscriptions were from architects and surveyors. Contractors did not subscribe, and he did not think the Society would wish them to do so; subscriptions should be limited to members of the profession; but the matter would be considered.

Mr. Scammell said that once a contractor gave a donation of 5*l.*, but the Society properly declined it on the ground that it was like levying blackmail.

In answer to a question, Mr. Dircks, secretary, said that only from 12 to 15 per cent. of the members of the Royal Institute of British Architects subscribed to the funds of the Society. There were thus 85 per cent. or so who did not subscribe.

Mr. Arthur Bolton moved, and Mr. Walter Spiers seconded, and it was agreed, that Mr. Edward Greenop and Mr. H. P. Burke Downing be re-elected as auditors and thanked for their past services.

Mr. Bolton said that the Society wanted not so much donations as subscriptions—the half-guineas and guineas.

Mr. A. Saxon Snell then moved to confirm the resolution adopted at the last annual meeting as follows:—

> That after the words "Hon. Secretary" in By-law No. 9 the following be added:—"and the President or Chairman for the time being of Architectural Societies and Corporate Bodies who have qualified under By-law No. 10."

Mr. Currey seconded, and the motion was agreed to. On the motion of Mr. T. M. Rickman, seconded by Mr. Scammell, a vote of thanks was accorded to the Royal Institute of British Architects for use of rooms and for various other help and kindness.

Mr. Christopher proposed a vote of thanks to the Chairman. Mr. Spiers seconded, and the motion was heartily carried.

The Chairman replied, and said he would have looked back upon his term of office with more pleasure had there been more response to the appeals made on behalf of the Society.

The meeting then terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Mr. R. A. Robinson, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Bermondsey Borough Council 5,012*l.* for granite paving works; Hammersmith Borough Council 7,000*l.* for wood-paving works; and St. Marylebone Borough Council 9,172*l.* for electric lighting purposes. Sanction was also given to the borrowing by Shoreditch Borough Council of 7,150*l.* for electric lighting purposes.

The Works Committee.—The adjourned report of the Works Committee submitting statements of works completed during the half-year ended September 30, 1907, was considered. The Committee stated that they appended to the report statements showing the estimated value and actual cost of works completed during the half-year ended September 30, 1907.

"Statement I. contains the accounts for twenty works in respect of which complete specifications and bills of quantities have been prepared, and one supplementary account in respect of work already reported. All these works were practically completed by September 30, 1907, and any slight expenditure incurred after that date has been brought into account.

This statement contains all works completed during the half-year, with the exception of certain paving work at Kingsway and section C of the northern outfall sewer enlargement, which cannot now be reported, as the cost is amalgamated with that of works yet in progress. The cost of six works has exceeded the final certificates, but the net result of execution of the works in the statement is a balance of cost below final certificate of 33,262*l.* 19*s.* 8*d.*, or over 11 per cent.

Two excesses only call for comment. The Sellincourt-road school was the first large elementary school erected by the department. Although two additional wings were added to the building as primarily planned, the work was completed within the time specified for completion of the original building, and possession of parts given before this. The excess is about 1½ per cent. At Knightsbridge fire-station more time was taken than was stipulated, but this was due to difficulties with foundations, which were entirely altered, and to variations and additions ordered as the work proceeded. These causes, for which the architect has made some allowance, in conjunction with a very low estimate, are responsible for the excess.

We again draw attention to the fact that the final certificates are below the accepted estimates.

Statement II. shows the results of the execution of jobbing works during 1906-7 and part of 1907-8, the cost being, for works not previously reported, 2,685*l.* 8*s.* 4*d.* below schedule value.

The total cost of the works included in the statements now presented does not represent the expenditure of the department during the half-year, because much of the expenditure on these works occurred previous to the half-year, while, on the other hand, much of the expenditure during the period was upon works which are still unfinished. The expenditure on works executed by the department during the half-year was approximately 220,000*l.*

The number of estimated works referred to us for execution, and not yet included in the half-yearly statements of completed works submitted to the Council, is thirty-seven, representing an estimated expenditure of approximately 1,342,600*l.* In addition, one work, to the estimated value of 560*l.*, referred on the basis of actual cost, and the construction of the tramway subway from Aldwych to Victoria-embankment, which was referred on a schedule of prices at an estimated cost of 46,160*l.* still remain to be reported. The greater portion of these works is, however, completed, and we regard with concern the diminution in the amount of work intrusted to the department. Relative economy in construction can only be secured by the reference to the department of sufficient work to carry the heavy standing charges for interest on and repayment of debt, interest on working capital, rent, insurance, office salaries and wages, etc., and one reason why the cost of works executed within the last few years has been on the whole consistenly below the final certificates of value has been the large annual expenditure."

The Committee give figures to show that the volume of work referred to the department has fallen off considerably since 1905-6. This decrease, due to financial or other considerations, has not hitherto been felt, as several large works, occupying two or three years in course of execution, have only recently been completed. The position in the immediate future is, however, altogether different. The large works referred to are completed, or nearing completion, and unless further works are referred, therefore, the estimated expenditure for the second six months of the year 1908 will be less than 40,000*l.*, and over this amount will have to be spread the standing charges.

The Committee further reported: "We are considering as to the reduction of the permanent staff to bring it into proportion to the lessened expenditure, but the debt charges cannot be reduced, and the addition, to the expenditure on labour and materials for works in hand, of the amounts necessary to distribute these and other standing charges must have the effect of bringing the cost to a figure considerably above that anticipated when the works were undertaken.

In this connexion we note the large annual expenditure incurred under standing order No. B 167 on works of current maintenance, special works of a limited nature, emergency repairs, and the manufacture of special articles. These works are carried out by departments other than the Works Department, under the management of the several committees concerned, and the expenditure, for the half-year to March 31, 1907, amounted to no less than 212,950*l.*; the statistics of works executed during the half-year to September 30, 1907, will be before the Council when this report is presented. We are in communication with the committees concerned with a view of considering whether all or any of these works can be executed by the Works Department.

As required by paragraph 8 (9) of our reference, we report that it appears that the cost of the undermentioned works will exceed the amounts of the respective accepted estmates:—Central School of Arts and Crafts and London Day Training College; Islington and Holloway tramway substations; Hammersmith Technical Institute; Tooting fire-station."

They recommended that excess of cost over final certificate in respect of certain works be approved, and in the course of the discussion which followed,

Mr. Edward White, Chairman of the Works Committee, asked what was the use of keeping men employed in the Works Department if there was nothing for them to do? The maintenance charges were too high in view of the lower volume of work, and must be reduced. Salaries amounting to some 3,000*l.* had already been saved, and the Committee hoped to reduce them still further.

Mr. McKinnon Wood asked: "Why is there no work for the department to do?" Mr. White talked as though the Council had given up work. But they all knew that the work was not given to the department because it was given to the contractors. That being so, why make any bones about it? The department was not being given work for the simple reason that the party opposite came in pledged to the contractors. The very kind of work which the department had proved itself best qualified to carry out—main drainage—had been taken from it. If they were going to kill the department, do it honestly and openly. But if they were going to wind it up, let them be perfectly clear as to the reasons for their action, and London would judge between them.

Mr. Peel said the time had arrived for the position of the department to be reconsidered. The work was diminishing, and the whole matter should be investigated by a competent committee.

Sir John Benn, M.P., reviewed the reasons which led to the creation of the department. It was started as a check over contractors who were invited to do the Council's work, and certain reports that were produced at the time showed that such a check was imperatively necessary.

Mr. Ben Cooper said that workmen would bitterly resent the action the Moderates proposed to take. They were sacrificing the interests of the ratepayers and of the workers in order to give more profits to the contractors. To call this "economy" was sheer humbug.

Mr. Hayes Fisher subsequently moved an amendment, that, "Having regard to the works uncompleted by the Works Department it be an instruction to the General Purposes Committee to consider and report upon the work and financial position of the department."

Mr. Isidore Salmon seconded.

Mr. McKinnon Wood said that the Progressive party declined to take part in the proposed inquiry.

Mr. Hayes Fisher's amendment was carried.

Northampton Polytechnic Institute.—It was agreed that, subject to the approval of the maintenance estimates, 1909-10, to the expenditure being hereafter sanctioned, and to the governors allowing the Council further representation on the governing body, an additional grant of 3,320*l.* be allowed to the governors of the Northampton Polytechnic Institute in respect of the cost of erection of a building in the courtyard of the Polytechnic Institute.

Appointment of Sanitary Inspectors.—The Public Health Committee recommended:—

That as, in the opinion of the Council, the Bermondsey Metropolitan Borough Council, as the sanitary authority for the borough, has failed to appoint a sufficient number of sanitary inspectors, a representation be made to the Local Government Board in accordance with the provisions of sect. 107 of the Public Health (London) Act, 1891.

Theatres, etc.—The following proposals were agreed to:—

Drawings, submitted by Messrs. Richard Crittall & Co., showing a system of inlet ventilation proposed to be installed at the Queen's Hall, Langham-place.

Drawings, submitted by Messrs. Spalding & Spalding, showing the proposed arrangement of the Gilbey Hall and Berners Hall at the Royal Agricultural Hall, Islington, in connexion with the Orient in London Exhibition to be held from June 4 to July 11, 1908.

A drawing, submitted by Mr. E. J. Stubbs, showing a proposal to extend the lift from the ground floor down to the basement, and to form a scullery in the basement at the Royal Horticultural Hall, Vincent-square.

A drawing, submitted by Mr. R. S. Ronald, showing certain additions and alterations proposed to be made to the lavatory accommodation at the Streatham Hall, Streatham High-road.

Cupboards, Totterdown Fields Estate.—It was agreed that tenders for the supply and delivery of cupboards for certain of the cottages on section A of the Totterdown Fields Estate be invited from selected firms; and that the work of fixing the cupboards be carried out under the management of the Housing of the Working Classes Committee by the direct employment of labour.

Rotherhithe Tunnel: Rehousing.—The following recommendation of the Improvements Committee was agreed to:—

"That, in the opinion of the Council, it will not be necessary in connexion with the construction of Rotherhithe Tunnel to erect on sites in Clarence-street and Albion-street dwellings to accommodate persons of the labouring class; and that the Local Government Board be asked to release the Council from its obligation, under the approved scheme for rehousing persons of the labouring class displaced in connexion with the improvement, to erect dwellings on the said two sites."

Improvements.—It was agreed:—

"That the estimate of expenditure on capital account of 850*l.*, submitted by the Finance Committee in respect of widenings at the junction of Junction-road and Monnery-road, be approved.

That the amount of the Council's contribution towards the cost of the construction by the Battersea Metropolitan Borough Council of a paved way, 20 ft. wide, under the West London Extension Railway, to connect Latchmere-road with Cabul-road, be 2,789*l.* 5s. 9d.

That, subject to the expenditure forming part of the cost of the Red Lion-street to Tooting High-street improvement, one-third of which the Wandsworth Metropolitan Borough Council is required to contribute, payment of 2,422*l.* 15s. 2d. to the Borough Council on account of the cost incurred in the execution of paving, etc., works in Garratt-lane, be sanctioned."

Drainage Appeal.—The Appeal Committee reported as follows:—

"We have considered two appeals under sect. 211 of the Metropolis Management Act, 1855, one by Messrs. Lanchester & Rickards on behalf of the trustees of the Wesleyan Methodist Twentieth Century Fund against the refusal of the Council of the City of Westminster to approve the method proposed for the drainage of the Wesleyan Methodist Hall, Tothill-street, S.W.; and the other by Messrs. Holloway Brothers against the refusal of the Council of the City of Westminster to approve the method proposed for the drainage of "Caxton House," Tothill-street, S.W. After hearing the parties, we varied the order of the City Council in each case, and approved the proposed systems of drainage, subject to the following conditions being complied with:—That details of the proposed system of drainage be carried out to the satisfaction of the Council's Chief Engineer; that the whole of the basement be rendered watertight to the satisfaction of the Council's Chief Engineer; that a duplicate Shone's ejector be provided; that plans and details of such ejector and of the rainwater drainage and outlets be submitted to and approved by the Council's Chief Engineer; and that the owners of the premises respectively do give a written undertaking to close the basement, wholly or in part, if the drainage thereof is at any time declared by the Council's Chief Engineer for the time being to be unsatisfactory, after reasonable opportunity of remedying defects has been given to the owners."

The Council adjourned 1.30 a.m. on Wednesday.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

THE London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projection.

Chelsea.—Bay windows, porches, and balconies at Ormond-court, Royal Hospital-road, Chelsea (Messrs Boehmer & Gibbs for Messrs. Bywaters & Sons, Ltd.).—Consent.

Clapham.—Bay windows and porches in front of five houses on the western side of Old Town, Clapham, southward of Lydon-road (Mr. A. P. Lambert for Mr. H. G. Blackmore).—Consent.

Islington, West.†—A greenhouse at St. Barnabas's Vicarage, Caledonian-road, Islington (Messrs. Lee & Pain-Clark for the Rev. F. Swainson).—Consent.

Norwood.—That the application of Mr. H. D. Wood for an extension of the period within which the erection of porches and oriel windows and the fixing of sham half-timber work to fifty-eight houses in Trinity-road, Herne Hill, and to fifty-seven houses in Brockwell Park-gardens, were required to be completed, be granted.—Consent.

Kensington, South.†—A conservatory over the porch in front of No. 15, Brechin-place, Kensington (Mr. J. Anderson for Mrs. N. Harris).—Refused.

Strand.—That the application of Fortnum & Mason, Ltd., for an extension of the period within which the erection of a projecting illuminated sign in front of No. 181, Piccadilly, was required to be commenced, be granted.—Consent.

Wandsworth.—Projecting porches and sham half-timber work to twenty-six houses on the south-western side of Wyatt Park-road, Streatham (Mr. W. L. Verran).—Consent.

Wandsworth.—Erection and retention of projecting porches and sham half-timber work to sixteen houses on the south-western side of Wavertree-road, Streatham (Mr. C. M. Quilter for Messrs. Chapelle & Utting).—Consent.

Whitechapel.—A building upon the site of Nos. 19, 20, and 21, Great Alie-street, Whitechapel (Mr. F. Selby for Mr. T. A. Mason).—Consent.

Woolwich.†—A new station, to be known as Well Hall Station, on the eastern side of Westmount-road, Eltham (Mr. J. W. Watkin for the South-Eastern and Chatham Railway Companies Joint Committee).—Consent.

Kennington.—A building on the south-eastern side of Stannary-street, Kennington (Mr. A. W. G. Harding for Messrs. Bull & Esdaile).—Refused.

Wandsworth.—A house on the northern side of Leigham Court-road, Wandsworth, flanking on the western side of Mount Nod-road (Mr. C. M. Quilter for Messrs. F. T. Wooding & Son).—Refused.

Width of Way.

Woolwich.—A two-story workshop building at the rear of Nos. 42, 44, and 46, Princes-road, to abut upon the eastern side of a passage-way at the rear of Princes-road, Woolwich, at less than the prescribed distance from the centre of the roadway of such passage-way (Mr. J. E. Edward for Mr. H. Collier).—Consent.

Width of Way and Line of Frontage.

Hampstead.—Retention of greenhouses on the northern side of College Villas-road, Hampstead (Mr. F. Debenham).—Consent.

Lines of Frontage and Construction.

Marylebone, East.—An iron and glass shelter in front of the Hotel Great Central, Marylebone-road, St. Marylebone (Sir Horace Regnart for the Frederick Hotels, Ltd.).—Consent.

Projection and Alteration of Buildings.

St. George, Hanover-square.—The uniting of No. 18, Berkeley-street, St. George, Hanover-square, with Nos. 31 and 32, Dover-street, whereby such premises, as united, will have an irregular open space at rear, and the erection of two oriel windows and a lobby (Mr. A. Burr for Mr. R. Menzies and Mr. F. Summers).—Consent

Space at Rear.

St. George, Hanover-square.—A modification of the provisions of sect. 41, so far as relates to the proposed erection of an additional block at the premises of Frederick Gorringe, Ltd., to abut upon Buckingham Palace-road and Brewer-street, St. George, Hanover-square (Messrs. A. E. Hughes & Son for Frederick Gorringe, Ltd.).—Consent.

Height of Buildings.

Paddington, South.—The retention of a building on the western side of Salem-road, Bayswater, and known as Moscow-court, exceeding in height the distance of the front or nearest external wall of such building from the opposite side of such street (Messrs. Roche, Son, & Neale and Messrs. Clinton & Co. for Messrs. Metcalf & Greig and William Whiteley, Ltd., and Mr. G. C. Bond).—Consent.

Cubical Extent.

Strand.—The erection, abutting upon Broad street, Ingestre-place and Lexington-street, Golden-square, W., of a building to exceed in extent 250,000, but not 450,000 cubic ft., and to be used only for the purposes of a beer stores, stables, and cask stores (Mr. A. Burr for Huggins & Co., Ltd.).—Consent.

Alteration of Buildings.

Marylebone, West.—The formation of a lift enclosure at No. 2, Great Cumberland-place, Marble Arch, St. Marylebone (Messrs. Read & MacDonald for Lady Russell).—Consent.

City of London.—The retention of an opening uniting Nos. 18 and 19, New Union-street, City (Mr. F. S. Hammond for Mr. J. Kent).—Refused.

Dwelling-houses on Low-lying Ground.

Rotherhithe.—That a licence be granted under sect. 122 of the Act to Mr. E. J. Bennett, for the erection of a dwelling-house on low-lying land situated at Silver-street, Rotherhithe.—Consent.

The recommendations marked † are contrary to the views of the local authorities concerned.

Legal Column.

LANDLORD AND TENANT.

THE recent case of London County Council *v.* Goode well illustrates the necessity of regarding agreements as a whole and not relying on isolated expressions or clauses. The action was brought by the Council to recover possession of a house from the defendant. The house had originally been leased in 1868 for a term of ninety-nine years. In 1875 this lease became vested in a Miss Pallett, and subsequently the defendant was in occupation of the house as a yearly tenant to this lady. In 1896 the defendant had applied for a lease, and Miss Pallett had then written saying that, having thought the matter over, she did not see her way clear to granting a lease, but the letter concluded, "As far as I am concerned you are welcome to stay on as my tenant of the above premises as long as you like, provided you pay your rent regularly." In 1904 Miss Pallett assigned the lease to other persons, who in turn assigned the lease to the London County Council, who had compulsory powers to acquire the same for improvement purposes. The defendant paid rent to both these assignees, but in 1906, notice having been given to quit the premises, the defendant claimed under the above letter to be entitled to a lease of the house as yearly tenant for life, and a judge in the courts below gave judgment for the defendant and decreed specific performance of the agreement. In the Court of Appeal many legal decisions were cited to the court, but the Lords Justices held it was not a question covered by authority, but a simple matter of construction of the document, and that, in view of Miss Pallett's resolution not to grant a lease, the defendant's contention and the judgment of the court below could not be upheld.

THE case Markham *v.* Paget, shortly reported in the *Builder*, *ante*, p. 316, raised some very interesting questions as between landlord and tenant. The plaintiff was tenant from year to year of a large mansion-house with its grounds, and during his tenancy the premises were rendered entirely uninhabitable owing to mining operations carried on by a colliery company beneath the premises. The defendant was one of three trustees under the will of her late husband, and she was also tenant for life of the premises and the mines and minerals, and she let the house to the plaintiff. Before the defendant's husband died an agreement for a lease had been granted to the colliery company, but the court held that this lease would not have conferred the right of letting down the surface, and the agreement contained a clause that if danger from subsidence was anticipated the company were to have power to leave sufficient coal for support without

paying for it. The defendant had executed, in common with the co-trustees, an indenture authorising certain trustees to grant a lease to the colliery company in terms which did not reserve a right to support, and which modified the agreement for a lease granted by her husband so far as it provided that coal might be felt for support without the company paying for it, a lease which was subsequently executed. The court held that the defendant had derogated from her grant, and also that there had been a breach of the covenant in the agreement with the plaintiff giving him "quiet enjoyment" of the premises, and the measure of damages under both heads being the same the plaintiff recovered 700*l*. The claim by the defendant against the colliery company for indemnity was dismissed on the ground that it was her own act in granting the plaintiff an easement which she had parted with, and in refusing to assent to coal being left for support, which had rendered her liable to the plaintiff.

Nuisance from Noise and Churches.

The case of Heath *v.* Corporation of Brighton raised some interesting points as to what constitutes a nuisance from noise in connexion with churches. The plaintiffs were the incumbent and trustees of SS. Mary and Mary Magdalene, at Brighton, a church in a district the population of which consists mostly of workpeople and small shopkeepers. In 1891 the defendants, acting under the Brighton Electric Lighting Order, 1883, had acquired land and erected electrical generating plant upon it in close proximity to the church, and in 1905 this machinery was added to, and the plaintiffs contended that this extension created a nuisance from noise. There was a considerable conflict of evidence, and a competent adviser was finally appointed by consent to report to the court. The court, in considering the evidence, laid it down that a place of worship was not entitled to anything further than the ordinary amount of quiet in a town, and having regard to the character of the locality the learned judge came to the conclusion that the noise was not such as would disturb ordinary and healthy persons, and consequently held that the plaintiffs had not discharged the onus laid upon them of proving such a degree of disturbance as would amount to a nuisance in law.

Architectural Societies.

Leeds and Yorkshire Architectural Society.—Under the title "Some Modern Conditions of our Art," Mr. Paul Waterhouse on Thursday, March 12, read a paper before this Society. He explained that, but for the certainty of being misunderstood, he should have called his subject "Material," a title which had been suggested to him by a line in Dante's "Paradise." Material in rather a new sense of the word was his theme. All arts could reasonably be analysed into two elements—material and skill. Under such a division it became obvious not only that in most of the arts the realm of material was a wider one than was generally supposed, but that in architecture in particular the word "material" could legitimately cover a surprisingly large field. The importance of appreciating the limits of material in architecture as in other arts lay in this—that the craftsman has to take the material as he finds it. He has, indeed, to transform it, but in the beginning his duty is to take it as it comes and to treat it according to the laws of its own nature. If, then, the architect once realises that material includes for him not bricks and mortar alone, but such things as the shape and value of a site, his employer's needs and means, and all other legitimate and prescribed conditions of the problem, including, before all things, the practical purposes of the building, he will find his mind relieved of certain scruples which sometimes assail an architect's conscience, or, at least, his pride. Nothing could excuse the setting aside by an architect of conditions as to cost and requirements, provided that such conditions were reasonable; nothing, again, could justify an architect in believing that a problem in design was unworthy of his attention because either of its simplicity or of its special or technical character. New needs and strange needs, large ambitions and small means, these were difficulties, no doubt, and obstacles, but obstacles were in Art's vocabulary only synonymous with opportunities.

Royal Victorian Institute of Architects.—The *Journal of Proceedings* of the Royal Victoria Institute of Architects (issued six times yearly) contains, in the latest issue which has reached us, an able paper on "Glass," by Mr. W. Montgomery, artist in stained glass; read before the Victorian Institute on October 22 last year. Some good illustrations are appended, representing we presume some of the author's own work.

CARPENTERS' HALL LECTURES:

Painted Glass.

The fifth of the present course of spring lectures arranged by the Carpenters' Company was delivered at Carpenters' Hall, London-wall, E.C., on Thursday last week, when Mr. James Powell lectured on "The History of Painted Glass and its Process." The Right Hon. the Earl of Plymouth, C.B., presided.

The lecturer explained that the craft had been practised for at least 1,000 years, and in the course of an interesting address, illustrated by lantern views, he dealt with the different characteristics of the succeeding periods of the art. St. Jerome, A.D. 422, spoke of glass melted and cast into thin plates and used in his time. Johannes Philoponus, who lived about the year 630, not only spoke of glass, but of the panes being fastened in with plaster, and that, no doubt, was the method common to the Eastern art, and could be seen to this day in Cairo. Some interesting specimens of this work could be seen in the Victoria and Albert Museum in South Kensington.

Having referred to other interesting historical facts in connexion with the art, the lecturer briefly explained the materials used for the making of a window. To explain the process in the simplest way, he might say that there was only one paint used, and that all colour was obtained from the different glasses. Coloured glass was obtained by melting certain metallic oxides wth the raw material of glass, the principle oxides being those of copper, gold, iron, tin, nickel, manganese, cobalt, and chromic oxides. When the glass was sufficiently melted it was gathered from the pot or crucible on a hollow iron rod by the glass-blower, and formed into a cylinder or "muff," as it was called, and it was then passed through the annealing ovens and gradually cooled. The "muffs" then went through a second process called spreading, which was to flatten them into a sheet. The "muff" was first cut through with a diamond, was then re-heated and flattened into a sheet, and again annealed. In blowing the "muff," a good workman could so handle the glass as to produce different thicknesses, which gave varied strengths of the same colour in the one sheet, which was most valuable to the cutter when selecting his glass. Glass more even in substance was, he thought, best suited to the work requiring delicate shading, such as one found in the work of the XVth or XVIth centuries; but glass of great variety of thickness, streaky in colour, was more suited for windows designed in a strong key of colour, when the painting should be simple and vigorous; and it was this kind of glass which was found in the XIIth, XIIIth, and XIVth centuries. Those coloured glasses were called pot metal, and the colouring matter went through the entire substance of the glass; but there were glasses which were called cased or flashed, and that applied chiefly to ruby, the colouring matter of which was of so dense a nature that it was blown as a film only on a base of white or tinted glass. Beautiful shades of ruby could be produced on a base of pale blue, yellow, or green. Besides the ruby glass, a cased blue was sometimes made which was very useful. This process applied only to those oxides which were of sufficient density to give a rich colour in a thin layer. One great use of these coated glasses was that by the use of hydric fluoride one could remove the colour skin in parts, and thus get the ground colour showing; this could then be treated with silver stain, and a variety of colour was obtained on one piece of glass. There was one colour which was obtained by the use of a stain which produced all those effects of gold to be seen in the diaper patterns of draperies, crowns, nimbi, and other enrichments. This stain was an oxide of silver, and was applied as a paint; if used strong it gave an orange colour, or if weak, a pale lemon yellow, and different degrees of heat would also produce a variety of shades of yellow. The pigment used by the glass-painter for tracing the outlines on the glass and for shading was a fusible glass containing a sufficient quantity of an infusible powder to produce the effect of opacity. The glass fixative must be more fusible than the glass background, but at the same time must be perfectly durable, withstanding all changes of temperature, and be impervious to moisture. The pigment could be used, after it was ground to the finest powder, as a water-colour or with a tar-oil medium. Of the lead which fastens the different pieces of glass together, it was first cast in short lengths, and then elongated in section it was like the letter H, which gave a narrow groove on either side for the glass. He had always considered that the original lead of early glazing was narrow, and in taking to pieces old glass which had generally been releaded at some later time, it would be invariably found that the pointing at the edges of the old glass had been covered up by the later lead, proving that the original was narrower. It was an interesting question whether the use of narrow leads suggested the diagonal line in design, and it was curious to note that so many of the designs in XIIIth and XIVth century work was so arranged; on the weather side the diagonal line of lead would assist the water to run off more quickly than it would do if the lines were placed horizontally. He had heard of square glazing perishing quickly, though this might be due to bad workmanship, or to its not being properly supported by iron bars. Lead from ½ in. to ⅝ in. in thickness was a good width, and the wider the width, if properly supported, the more chance there was of resisting the weather. In the glazing of some of the windows in St. Paul's Cathedral lead an inch wide was used. For a window designed in a strong key of colour a great deal of lead was advisable. It enhanced the colour, and added to the brilliancy and glitter of the glass.

The iron bars that supported a window and held it in its place should be an important element in the design, and they should be made to assist it. In the medallion windows of the XIIIth century, which were of great width, the ironwork formed a geometrical grille over the whole space, and in that way formed the skeleton design of the window. Quatrefoils, circles, and diamonds were the shapes most used, and in them the figure subjects were placed, the interstices being filled with diaper work in rich colour. The iron frames were fixed, in many cases, into oak frames, some of which still exist in Salisbury Cathedral. Later on came saddle-bars, one thick, and two or three thinner. Sometimes there were one or two stanchion bars, according to the width of the light, and to these were added saddle-bars 9 in. to 12 in. apart. These were often placed on the outside, and had a decorative effect in uniting the wall spaces with the window.

A visit to the church is the only safe way of planning a design for a window. The surroundings of it and its height from the floor line suggested the scale of the figures to be used, and the surrounding objects, such as a reredos or an old tomb, would often show where emphasis should be given to a design. Photographs would, of course, give a good deal, but not the colour of the walls, the stone frame, or the surrounding objects of decoration. The colour scheme must be influenced by the stone, whether it was the purplish-red stone of some churches or the whiter stone of others. Then there might be the mediæval ironwork remaining, or pieces of old glass, and all these wanted careful consideration, though, he feared, they were often destroyed. In planning a large window lately for Salisbury Cathedral he measured carefully the old ironwork existing, still in its old oak frame, and he had been able to arrange a new design of the glass so that not a single old bar had to be moved. This helped one to arrive at a scale of figures suited to a building, and it kept one from erring in extravagant pictorial effect. The size of the figures to be used could not be too carefully studied, as they had such an influence on the whole building. The strength of colour was best settled in the building itself. A light church, in his opinion, was not the best suited to deep, rich colour; the cross-light and light thrown directly on to the glass from many windows destroyed the brilliance of deep colour and gave a muddy appearance to the glass. A dark aisle with a window with strong light behind it, and no cross-light in front, was the place for deep colour. The feeling now, he thought, was for light churches.

"And storied windows richly dight
Casting a dim, religious light"

could be enjoyed in many an old cathedral. A window was made to admit light, but it was quite possible to obtain effects of richness without shutting out too much light, for if colour pure were used without much paint brilliance and richness were got; it was the paint that shut out the light more than the coloured glass. In an old contract for glass in one of our cathedrals the authorities ordered windows composed of two-thirds of white glass and one-third coloured, and while it was not necessary to go as far as that, still he thought that white glass should bear a good proportion. An east window required more colour than side windows because of the reredos or wall decorations placed below it, which would not be seen properly if there was too great a glare of light. There was a tendency now, when a great many colours were made in glass, to use too many in a window, for if they studied the splendid effects produced in the windows from the XIIth to the XVIth centuries, whether at Le Mans, Chartres, Canterbury, York, Wells, Gloucester, Nuremberg, or Florence, they would very rarely find more than from six to eight glasses used. The best decorative effects were always produced with a simple colour scheme, just as in mosaic and other decorative processes. He had seen a good effect produced with the use of three glasses only—a white, a blue that would stain well, and a ruby.

A coloured sketch of a window should first be made to 1-in. or ½-in. scale—or whatever scale the artist was most used to—and on this he should plan the ironwork to support the glass so as to make it assist the design. The subjects of windows ought to receive more careful study than they often do, and, where possible, a scheme for a church should be laid down, which would prevent the chaotic arrangement of windows which were put in to suit the whims of each donor, and which destroyed the teaching power that windows might and ought to have. Those who practised this art had a great responsibility in this way.

When the sketch was approved, full-size cartoons were prepared, and these should be real working drawings, showing the planning of the lead lines and iron bars. It was a fatal mistake for an artist to make a cartoon for glass and leave it to someone else to plan the lead. The artist must think out his design in glass and lead. Before making his cartoons he should make what studies from life his work required. A tracing was then made of his cartoon for the purpose of cutting the glass, and the artist should assist the cutter in the selection of suitable pieces of the material, which was so varied in every sheet. A finer gradation of colour could be got by this careful selection than any paint could afterwards produce.

The glass was then taken to the painting-room and laid out on its cut line drawing, and the painter then traced on the glass the leading lines from the cartoon, and the glass was then fixed up with wax on a large sheet of plate-glass so that it could be lifted on to the painter's easel, where he could see the effect of all the colours. It was a good thing to paint the lead lines at the back of the plate-glass so as to obtain the full value of the colour. The pigment was then applied as a mat over all the glass, and could be worked smooth or rough as the artist desired. The modelling was then begun by removing with scrubos or short brushes of hoghair or other material the high lights of the drawing. Some of the colours required different treatment—ruby and yellow glass required more grit to make them sparkle. The glass was then burnt in the kiln and again placed on the plate with wax, and a second painting took place to bring the shading to its required strength. This was again burnt in the kiln, and then the silver stain was applied where required, and this again had to pass through the fire. It should then be placed for a third time on the plate and corrected where necessary, the silver stain being reduced by acid if the yellows were too strong or required modification. The window then went to the glazier and was leaded and soldered together. Next, cement was rubbed into the leaf of the lead and cleaned off, and the window stood up so that the cement might harden. It was then ready for fixing.

The lecturer then dealt at some length with the different styles of glass-painting that had come down to us, and in the course of his remarks he said he was not aware of any existing windows earlier than the XIIth century, and these (most of which were found on the Continent, with the exception of the fragments which remain at York) he proceeded to examine. In France the most interesting specimens of the XIIth century were at Le Mans, Chartres, St. Denys, and Angers. Strasbourg also had some XIIth century glass. Of XIIIth century glass there were many examples in this country, notably at Canterbury, York, Salisbury, and Lincoln, and many fragments in churches in different parts of the country. In France there was much more than in this country and Chartres alone contained, so said Mr. Westlake, 125 very large painted lancets, three immense rose windows, thirty-three rose windows over the lancets, and twelve smaller circular windows. At Bourges there was a large quantity, and at Rheims, Le Mans, Rouen, Sens, Notre-Dame, Paris, Tours, Troyes, and in many other cathedrals and churches. There were three kinds of windows of the period, *i.e.*, the figure window, either with medallions of subjects or single figures, the grisaille windows, and the pattern windows of plain glass. The windows of the period were wide and large, and it became necessary to have an iron grille fitted to the window to support the glazing, which was heavy from the thickness of the glass and the quantity of lead used. The grilles were generally of geometrical design, formed of circles, quatrefoils, and squares. The iron was thick, and its strong, black lines formed a splendid foil to the glittering jewel-like glass which was characteristic of the period. A border often nearly one-sixth of the whole width ran round the window, and the geometrical spaces within were filled with subjects of small figures, and the intervening spaces were filled with diaper work of rich colour. The foliage scrollwork was finely drawn, and the leaves were almost always of the trefoil shape, and the figures were very vigorous in drawing. The colours used were few in number and primary in colour. The lecturer then described some of the cathedral windows of Canterbury, Chartres, Bourges, York, Salisbury, Lincoln, etc., at this period, and he also dealt with the glass of succeeding centuries, illustrating his remarks by a number of lantern views of well-known windows.

In conclusion, he said that through the XVIIth century the use of pot metal declined, and enamel colours were used which were fast fading away, and so gradually the art declined. An attempt was made to revive it at Oxford by getting Sir Joshua Reynolds to design some subjects, and he made beautiful drawings of the Nativity and the Cardinal Virtues; but they were painted on squares of the poorest glass, and shaded in colours that were fast disappearing, showing that the art of making glass was then dead and no worthy material was obtainable; nor did the artist understand the principles necessary for the making of a window. In picture-painting an artist painted his picture and then placed it in a frame, but in glass the artist had to design his glass to an existing frame, which he must always keep in mind, and he must make the flowing lines of the tracing of stone the starting-point of his design, so as to produce a harmony between them. He must not make his glass look as though it was a picture seen through a framework of stone, as something beyond, but must keep it so that it continued the wall space through his window. He remembered going into the cathedral at Brussels with a friend to see the famous windows in the Chapel of St. Gudule, which are large compositions extending through several lights, and his friend exclaimed: "There is a chance for you; there is a scaffold in front of the window so that you can get up and examine the glass." But what his friend had taken for scaffold poles were the stone mullions, and that explained what he (the lecturer) meant about the wall spaces, and showed the danger of such a treatment. Should an artist feel that the lead lines and iron bars were a nuisance to the effect he was aiming at, one might be sure that his aim was too pictorial, and that he would end in producing an unsuitable picture and a bad window.

A vote of thanks to the lecturer having been agreed to, and also a vote of thanks to the Chairman for presiding, the proceedings terminated.

THE HAMBURG-AMERICA LINE OFFICES.

THIS building, in Cockspur-street, the façade of which we illustrated about a year ago (*Builder*, March 23, 1907), was visited on Saturday last by the members of the Clerks of Works' Association, the interior fittings being now all but complete; and we may therefore take the opportunity of giving some further particulars in regard to what is in every respect a very interesting building.

The building was erected by the Disconto-Gesellschaft; the main portion of the ground floor and basement is now occupied by the Hamburg-America Line for their enlarged offices, the remainder of the building being available for letting as offices—to be divided into suites to tenants' requirements.

The building, which is of seven stories and is of steel construction, stands on two different properties, and the main setting-out has been unalterably determined by the conditions of the site and the requirements of the freeholders, and the exigencies of the light and air of the adjoining properties. The main shipping office is about 75 ft. by 40 ft. by 18 ft. high, and is treated as one large room, the left-hand side devoted to the cabin and the right-hand to the tourist departments, with the cashier in the centre. Behind the cashier's department are the telephone cabinets and the typewriters. In the basement beneath the main shipping office are the baggage-room with strong-room, goods-lift to the back street, and extra office accommodation, lavatories, etc.

The manager's room in connexion with the main office is approximately hexagonal in shape, and has a domed ceiling; the walls are white-painted panelling, with a marble fireplace.

The main office ceiling is of modelled plaster of considerable scale and relief; the walls are panelled 11 ft. high in choice Cuba mahogany with specially selected veneers in the upper tiers of carved panels. The dividing pilasters are inlaid with mother-of-pearl of selected colouring, and the caps and bases of the secondary pilasters are of ormolu. The mahogany is of natural colour, polished, but not stained, and is of golden yellow-brown in colour.

There is a frieze of modelled plaster 6 ft. deep above the panelling, the principal bays having ovals representing by figure composition the four Continents.

All the modelling has been carried out by Mr. Schacht from the architect's drawings, and the casting was executed by Mr. Aubrey. The central columns on the dividing line of the properties are of steel encased in concrete, and have been finished on the solid with superfine Keene's cement, and polished by Mr. Minshull to a white marble face, the bases being finished black, while the caps are gilded and in part burnished.

All the elaborate joinery, fittings, and furniture have been carried out by Messrs. Waring & Gillow at their Hammersmith factory from the architect's drawings, and Mr Raymond has been responsible for the solid mahogany carving. The mother-of-pearl inlay was supplied and cut by Mr. Lucas. The floor is of interlocked indiarubber laid out in white bands with a solid black filling. Irish green marble from Connemara has been used in the fireplaces, in combination with Pavonnazzo and Italian Brescia.

The large and elaborate chandeliers and other pendants, the ormolu and bronze screens, door-plates, etc., and the large wrought-iron screen and gates to the main entrance, and also the balcony railings, have all been executed at Birmingham from the architect's drawings by the Birmingham Guild of Handicraft.

The external bronze-work, including the large panel with life-size figures over the entrance to the shipping office, was modelled by Mr. J. Wenlock Rollins, and cast by Mr. Burton, of Thames Ditton.

The sculpture in Portland stone on the façade, comprising the two large figures in the half-pediments, representing Germany and America, and the frieze of nine bas-relief panels across the curved lines of the bay windows (the subjects being the chief travel stories of antiquity), were all modelled and carved by Mr. W. B. Fagan.

The work has been in progress about eighteen months, and the total cost approaches 50,000*l*.

The architects are Mr. Arthur T. Bolton and Messrs. Stock, Page, & Stock; the quantities were taken out by Messrs. Widnell & Trollope; Mr. Sandall has been clerk of works, Mr. Brooks general foreman, and Mr. Roscoe foreman in charge of all joinery and fittings for Messrs. Waring & Gillow; the builders were the Waring White Building Company, Ltd., the following firms being employed:—

Norwegian granite, Messrs. Whitehead & Sons; Portland masonry, the Bath stone firms; joinery (deal and hardwood), Messrs. Waring & Gillow, Ltd.; special veneers, Messrs. Howard; mother-of-pearl inlay, Mr. Lucas; steelwork, Messrs. M. T. Shaw; plastering, Messrs. Wheater; modelled and casted decoration, Messrs. Schacht & Aubrey; paving, The Dolomite Company; concrete staircases and cement floors, Stuart's Granolithic; plumbing and drainage, Messrs. Dent & Hellyer; electric wiring, Messrs. Beaven; heating, Messrs. Nicholson & Co.; electrical fittings, The Birmingham Guild; bronze screens and wrought-iron work, The Birmingham Guild; cast bronze, Mr. Burton, Thames Ditton; party wall, doors, and safes, Messrs. Ratner; grate interiors, Messrs. Wright & Co.; hydraulic and electric lifts, Messrs. Waygood; casements, Messrs. Burt & Potts; lead glazing, Messrs. Harvey & Ashby, Birmingham; plate glass, Messrs. Wooton; show cases, Messrs. Stanley Jones & Co.; hardware, locks, staircase handrails, etc., Messrs. Hart, Son & Peard; tiling and marble work, Messrs. Van Straaten; mosaic floor vestibule, Messrs. Burke & Co.; rubber flooring, The Peerless Rubber Floor Company; parquet floor, Messrs. Turpin; asphalt flats, etc., Messrs. Thomas Faddo & Co.; painting, *etc.*, Messrs. Waring and Gillow.

STATUE OF THE PRINCESS OF WALES.—Mr. G. Frampton, R.A., is executing a statue of the Princess of Wales, which will be set up in the Queen Victoria Hall at Calcutta.

PROPOSED NEW BUILDINGS IN LONDON AND SUBURBS.

THE following is supplementary to the list of applications under the London Building Act, 1894, in another portion of this issue:—

Six blocks of flats at Hammersmith. Mr. F. W. Hingston, Portland House, Basinghall-street, E.C., architect.

Seventeen houses at Hendon. Mr. Edwin Evans, 253, Lavender-hill, S.W., agent.

Development of estate at Hampstead Way. Messrs. Parker & Unwin, Wildes Farm, North End, N.W., architects.

Extension of factory at Tottenham. Mr. S. Clifford Tee, 50, Moorgate-street, E.C., architect.

Additions to factory at Hendon. Messrs. A. Garston & Co., The Hyde, Hendon.

Depôt for carts, etc., at Grove-road, W. Mr. J. Paget Waddington, Borough Surveyor, Town Hall, Marylebone, W.

Buildings in Dunraven-road, Hammersmith. Mr. W. G. Ingram, 4, Verulam-buildings, Gray's-inn, W.C., architect.

Additions to premises in Seven Kings-road, Ilford. Messrs. Ward & Ward, 265, High-road, Ilford, architects.

Six houses in Ilford. Messrs. Rawlins & Co., 46, Queen Victoria-street, E.C., agents.

Two shops in Willesden. Mr. H. Shaw, 60, Nicholl-road, N.W., architect.

Development of estate in Church-road, Willesden. Messrs. Done, Hunter, & Co., High-road, Cricklewood, agents.

Two houses in Mount Pleasant-road, Willesden. Messrs. Trant, Brown, & Humphreys, 33, High-road, Kilburn, architects.

Sub-transformer-station at Tottenham for North Metropolitan Electric Supply Company, Taylors-lane, N.W.

Additions to sub-station in Holborn, for Charing Cross, West End, and City Electricity Supply Company, Ltd., 60, St. Martin's-lane, W.C.

Offices for Urban District Council, Carshalton. Mr. W. W. Gale, Council Surveyor.

Development of Westmead Estate, Carshalton. Messrs. Dartnell & Banks, 34, High-street, Croydon, architects.

Additions to "Hakoni," Brondesbury Park. Mr. W. J. Ancell, 3, Staple-inn, W.C., architect.

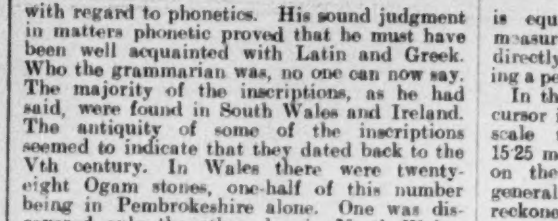
OLD-WORLD TOMBSTONES.

AT the Royal Institution, Albemarle-street, Professor Sir John Rhys, M.A., gave an interesting lecture on "Ogmic Epigraphy," and he expressed the hope that builders and others would keep a sharp look-out for stones which bore Ogam inscriptions. These stones, he observed, were usually found in South Wales and in Ireland, and they were invariably assigned to the Vth and VIth centuries. The inscriptions were on the edges of tombstones. The Ogam alphabet consisted of twenty-one letters, made up of four groups of five symbols, with the consonant "p" over, and for which there were three alternative symbols. The vowels were represented by notches, and the consonants by strokes. Some were written to the right, and others to the left, hence the reason for the writing being on the edges of the stones. It often happened that the tombstones were upside down, and so the best way of ascertaining the commencement was to discover the key work. Though the majority of Ogam inscriptions were found on tombstones, it was apparent that the material originally used for the writing was of something softer, most likely wood, so fashioned as to present edges on which the notches and strokes could be cut to the right and to the left. It was certain that some Ogam writers took no precautions to see when they began to cut an inscription that they would have room on the stone to complete it. Therefore, some were written in a bewildering condition, and occasionally the tail joined the commencement of the inscription. No doubt the custom was for a professional man to hand a wooden inscription to a workman to cut it on stone, and it was quite possible that the workman knew nothing of the meaning of the ciphers, and so commenced at which end he preferred. If Ogmic epigraphy were now used, and a man wished to write a long letter, he would require a wagon drawn by four horses to have it delivered to its destination. Sticks, he should say, were vastly more used for the writing than stones. Now, of course, only the stones remained, the wooden inscriptions having all disappeared. Why should the alphabet comprise straight lines? The only possible answer was that the alphabet was a cipher suggested by the scoring used for numerical purposes in Latin. The inventor of the Ogam alphabet was undoubtedly a grammarian, as was proved by the placing of the vowels. Indeed, he had no hesitation in saying that the inventor was distinctly above the level of the direct teaching of the Latin or Greek alphabet with regard to phonetics. His sound judgment in matters phonetic proved that he must have been well acquainted with Latin and Greek. Who the grammarian was, no one can now say. The majority of the inscriptions, as he had said, were found in South Wales and Ireland. The antiquity of some of the inscriptions seemed to indicate that they dated back to the Vth century. In Wales there were twenty-eight Ogam stones, one-half of this number being in Pembrokeshire alone. One was discovered only the other day in North Wales. Devon and Cornwall had five, whilst there was only one for the rest of England, that being found, curiously enough, at Silchester, of Roman history. In the east of Scotland there were seventeen, but they were of the latest class. Only one had been discovered in the west of Scotland. The Isle of Man had furnished six, some of the earliest and some of the latest type. Some of the stones preserved in museums in Ireland were palpable fakes. Of all the stones that had been found, the most important and instructive were those which had been discovered in Wales and Devon, as they were accompanied with legends written in Latin letters. In the olden days many of these tombstones had been stolen from churchyards and used for building underground dwellings, and for foundations, walls of churches, etc. Hence it behoved all who were engaged in the demolition of ancient buildings to search for these valuable records of the long-gone past. Even the grave-diggers should be taught the value of the old stones, so that specimens might be saved. What was their value? They were especially valuable because they shed a light upon an obscure period in our history, and were invaluable to the philologist, as all the early Latin manuscripts had disappeared, only those on stones remaining. Hardly a year passed without bringing to light additional Ogam inscriptions in the south of Ireland.

MAVITTA'S VERNIER DRAWING SCALE.

THIS scale is intended for architects, surveyors, and engineers, its object being to enable plans and mechanical drawings to be marked out with accuracy and far more expeditiously than with ordinary forms of scale.

The instrument consists of a strip of boxwood 15¼ in. long by 1$\frac{5}{16}$ in. wide by ¼ in. thick, having the front edge bevelled so that it may be set up to a base line. On the bevelled edge a 12-in. full-sized scale is marked out with subdivisions down to sixteenths of an inch. The sides of the strip are grooved for the attachment of a sliding cursor, by whose aid readings can be made on two scales engraved on the top surface of the instrument, the positions of the readings being indicated in front of the bevelled edge by a flat arm projecting from the body of the cursor. The scales on the top are the same as on an open divided scale, and subdivisions in inches or other small units can be read at any position of either scale from one or two ivory bevelled scales attached



Mavitta's Vernier Drawing Scale.

to the cursor frame. The cursor is provided with a clamping device, which is automatically released when the cursor is gripped for the purpose of moving its position. Any required scales can be engraved on the top face of the instrument, and these can be used independently or comparatively.

We have received two samples of the new scale. One of these has a ½-in. and a ¼-in. scale, and the other has a 1-50-metre and a 1-50-ft. scale, in addition to the 12-in. full-size scale on the bevelled edge. When the cursor index is at zero on the 12-in. scale the index markings on the cursor ivory scales are also at zero.

In the case of one instrument, when the cursor index is placed at 12 in. on the bevelled scale the cursor ivory indices are opposite 24 ft. on the ½-in. scale, and 96 ft. on the ¼-in. scale. Thus the relationship between all three scales is clear, the same ratio, of course, applying to all intermediate readings, so that on moving the cursor index to, say, 7$\frac{5}{16}$ in. we instantly obtain the equivalents of 14 ft. 10½ in. on the ½-in. scale, and 59 ft. 6 in. on the ¼-in. scale.

The facility with which comparison of the two scales can be made should be found extremely useful in the enlargement or reduction of drawings, and the projecting cursor index is equally convenient, because by its aid measurements read on the top scales can be directly marked upon a plan by simply drawing a pencil-point against one edge of the index.

In the case of the other specimen, when the cursor index is placed at 12 in. on the bevelled scale the cursor ivory indices are opposite 15·25 metres on the 1-50-metre scale, and 50 ft. on the 1-50-ft. scale. Thus, apart from its general utility, the scale is available as a ready reckoner for all metrical equivalents of British measurements in feet and inches from 0 to 50 ft., and *vice versâ* in metres and half decimetres from 0 to 15·25 metres.

The instrument is neatly finished, and will probably be widely appreciated as a labour and time saving appliance for the drawing office.

PROPOSED EXPENDITURE ON PUBLIC BUILDINGS.

AMONGST the works sanctioned by the Treasury in connexion with public buildings, etc., for which provision will be made in the Civil Service estimates for the year commencing April 1, 1908, are the following:—

Windsor Castle.—Covered-way in front of Privy Purse stables, 350*l.*; covered-way from coach-house to north side of lower court, 500*l.*; new wash-house with baths in married quarters, 700*l.*; induced-draught fan and engine for waterworks, 250*l.*; new pumping engine at Castle waterworks, 700*l.*

Greenwich Park.—Alterations to superintendent's lodge, 150*l.*

Kensington Gardens.—Laying out site of old frame ground, 2,000*l.*; altering workshops and stores at back of orangery, and foremen's offices, 300*l.*

Royal Botanic Gardens, Kew.—Alterations to Cambridge Cottage, including furniture, 1,550*l.* (to complete total estimate of 3,700*l.*); tank for aquatic and bog plants, 420*l.*; fixing unclimbable fencing between gardens and Old Deer Park, 475*l.*; culvert in Ha-Ha at Isleworth end of gardens, 280*l.*; enlarging stoke-hole and improving heating arrangements for tropical propagating houses, 410*l.*

Regent's Park.—Playground for children, 180*l.*; extension of Chester-road conveniences, 500*l.*

Richmond Park.—Planting at Penn Ponds, 120*l.*; new gate lodge at East Sheen entrance, 600*l.*

Hyde Park.—Completion of reconstruction of frame ground, 2,000*l.* (total estimated cost 14,000*l.*); erection of tea-house and provision of public conveniences, 1,500*l.* (to complete total cost of 3,000*l.*).

County Courts.—1,060*l.* to complete erection of second Court-room and alterations to main buildings, Bloomsbury; 8,120*l.* to complete new Courts and offices, Brompton; on account of new Courts and offices, Westminster, 9,250*l.* (total estimated cost, 13,950*l.*; already expended, 3,000*l.*).

Museum Buildings.—Alterations to roof construction of British Museum with a view to the better protection of the buildings from fire, on account, 1,000*l.* (total estimated cost, 9,000*l.*); erection of temporary workshops, 250*l.*; improvement of study and workroom accommodation in department of Greek and Roman antiquities, British Museum, 400*l.*; completion of study and storeroom, small mammalia collection, Natural History Museum, 920*l.*; construction of packing and store shed, Natural History Museum, 300*l.*; construction of gallery in insect section of department of zoology, Natural History Museum, 500*l.*; Victoria and Albert Museum, safeguarding glass roof of architectural courts as a precaution against accidents, 150*l.* to complete (total estimate, 800*l.*); provision of museum cases, library fittings, etc., for new buildings, 17,500*l.*

Somerset House.—Additions and alterations, joint stock companies branch, 2,100*l.*; additions and alterations, stamping department, 820*l.*; provision of additional hydraulic injector in connexion with fire mains, 1,000*l.*

Post-office and Telegraph Buildings.—The following are the amounts asked in the coming financial year for the completion or furtherance of works already in progress, the total estimated cost being shown in parentheses in each case:—General Post-office, King Edward VII. building, 85,000*l.* (316,000*l.* for structure only); new branch post-office, Aldgate, 2,520*l.* (3,520*l.*); new power-station, Blackfriars, 5,500*l.* (48,500*l.*); new post-office, Blackheath, 7,390*l.* (7,490*l.*); sorting-office extension, Lower Holloway, 2,080*l.* (3,580*l.*); new sorting-office, New Southgate, 2,880*l.* (3,180*l.*); new branch post-office, South Kensington, 6,000*l.* (21,670*l.*); parcel-office enlargement, Western District, London, 13,000*l.* (16,850*l.*); new post-office, Western District, London, 25,000*l.* (69,000*l.*). In addition, various sums are required for new post-

offices, extensions, etc., in progress in some thirty-five provincial towns. The following amounts are asked on account of new works not yet commenced:—Hornsey, sorting-office extension, 2,200*l.*; Leyton, sorting-office extension, 2,000*l.* (2,340*l.*); Lombard-street, rebuilding branch office, 1,000*l.* (3,570*l.*); Dudley, post-office enlargement, 3,000*l.* (6,400*l.*); Halifax post-office enlargement, 1,500*l.* (3,400*l.*); Leamington Spa, post-office extension, 3,000*l.* (5,350*l.*); Longton, new branch post-office, 2,000*l.* (4,410*l.*); Lowestoft, post-office extension, 750*l.* (7,175*l.*); Margate, new post-office, 1,000*l.* (13,000*l.*); Newcastle-on-Tyne, head post-office extension, 5,000*l.* (37,150*l.*); Stockton, post-office extension, 1,000*l.* (1,430*l.*); Stoke-on-Trent, new post-office fittings, 500*l.* (1,300*l.*); Taunton, station sorting office extension, 1,000*l.* (1,230*l.*); Uxbridge, new post-office, 2,000*l.* (5,450*l.*); Winchester, post-office enlargement, 2,800*l.* (4,800*l.*); Oban, new post-office, 6,000*l.* (9,650*l.*).

Admiralty.—Erection of official residences of the First Lord and the senior Naval Lord in lieu of existing residences to be appropriated to official business, 25,000*l.* (80,000*l.*); provision of a passenger lift in Block I., 1,000*l.*

Great Scotland-yard.—For the erection, on a site to be leased, in Great Scotland-yard of a recruiting-station, 5,000*l.* (25,000*l.*); upon the completion thereof it will be possible for the War Department to surrender St. George's Barracks, where space is needed for the future accommodation of the National Gallery and the National Portrait Gallery, as well as for the protection of the national collections from fire.

Meteorological Office.—Erection of offices, South Kensington, on account, 4,500*l.* (10,580*l.*).

National Gallery.—Extension of the gallery westwards, over part of the barracks site, on account, 10,000*l.* (58,500*l.*).

Patent Office.—For the acquisition of a site and building thereon, and for the purchase of an additional site to meet prospective needs, on account, 10,000*l.* (90,000*l.*).

Royal Courts of Justice.—For the erection of additional courts on land to the west of the main building, 5000*l.* (95,000*l.*); for improvements in central hall and staircases from hall, 2,250*l.* (4,500*l.*); rearrangement of heating apparatus, 600*l.* (2,600*l.*).

Royal Mint.—Increased accommodation for the mechanical department; erection of new workshop and foundations for new engine, 5,000*l.* (10,000*l.*).

Treasury and Home Office.—For carrying out alterations consequent on impending changes in occupation, 3,000*l.*

COURT OF COMMON COUNCIL.

A MEETING of the Court of Common Council was held at the Guildhall on Thursday last week, the Lord Mayor presiding.

Holborn Viaduct.—Mr. Deputy Millar Wilkinson asked the Chairman of the Streets Committee whether his attention had been called to a statement made in an engineering journal questioning the safety of Holborn Viaduct.—Mr. Heilbuth, replying, said there was no truth in the suggestion. The bridge spanning the road had been examined by the Engineer on March 2, and he had failed to discover any defect or displacement of the pillars affecting the stability of the structure.

The Hornchurch Wharf.—The Streets Committee presented a report relative to the wharf at Hornchurch, and submitted for adoption an arrangement with the Yorkshire Hennebique Contracting Company, Ltd., for the settlement of all matters in dispute with the Corporation under the maintenance clause of the contract; and recommended that a warrant be drawn in due course for 268*l.* 5s. 2d. in payment of the balance due to the company under such arrangement. The Committee, reporting on the condition of the wharf, stated that they had instructed Mr. William T. Foxlee, M.Inst.C.E.—the expert employed in the matter—to prepare alternative plans and estimates for a new wharf, 300 ft. long (instead of 400 ft. as at present), in (1) ferro-concrete, (2) in timber, and (3) for a solid wharf wall of masonry or concrete. The consideration of the report was adjourned to the next meeting.

Southwark Bridge.—A letter was received from the Clerk of the London County Council, with reference to the contemplated rebuilding of Southwark Bridge, asking the Corporation to take into consideration the question of an extension of the tramways across the bridge, simultaneously with the reconstruction of the bridge, if decided upon, and stating that the Highways Committee of the Council will be glad to confer with a Committee of the Corporation on the subject. It was referred to the Bridge House Estates Committee.

Applications for the Loan of Pictures.—An application from the Committee of the Bristol Art Gallery for the loan of pictures belonging to the Corporation, and a letter from Sir Edward J. Poynter, Bart., P.R.A., asking for the loan of certain works for the Franco-British Exhibition, were referred to the Library Committee.

Royal Sanitary Institute Congress.—On the recommendation of the Port of London Sanitary Committee, it was agreed that the Chairman and late Chairman of this Committee, with the Medical Officer of Health, should represent the Corporation at the Congress to be held at Cardiff in July next.

London and Rogers' Almshouses.—The Orphan School Committee were authorised to proceed with the reconstruction of the drainage at the London and Rogers' Almshouses, at an estimated total cost of from 400*l.* to 500*l.*

The Old Council-chamber.—The City Lands Committee, in a report dealing with the necessity for further accommodation at the Guildhall, stated that they had been quite unable to find any adequate existing accommodation, and that they had directed the Surveyor to inquire into and report on the matter. He had now submitted plans for a new building on the site of the old Council-chamber, such building to contain a large court or chamber to take the place of the old Council-chamber, and to serve as a Court, and, when not so used, as a committee-room for the assessment and other committees connected with the new department.—Mr. Lile, in moving the adoption of the report, stated that the cost was estimated at 12,000*l.* Mr. J. Harris, as an amendment, moved that the consideration of the matter should be adjourned for six months on the ground that no one knew at present what accommodation would be required. Mr. Deputy Ellis seconded. Alderman Sir Vezey Strong expressed the view that there was a great deal of misapprehension about the old Council-chamber. It was only 131 years old, and the north wall was bulging so badly as to be a source of danger to the public. Its historical associations were not sufficient to justify the Corporation to refuse to utilise so valuable a site for practical purposes. Mr. Deputy Morton, M.P., said that, in his opinion, it was advisable that an eminent architect should be consulted on the matter. Other members having spoken, the amendment on a division, was rejected. A further amendment to the effect that the report be referred back to the Committee in order that an expert might be consulted was also lost. The report of the Committee was then approved.

Fifty Years Ago.

FROM THE *Builder* OF MARCH 20, 1858.

STATE OF THE THAMES.

THE terrible effects of the Thames water in Bermondsey, Vauxhall, and other neighbourhoods where it was used is unfortunately too well known; and great has been the saving of life since better water has been brought into the houses. The water of our river has been examined times out of number, and its impurity year after year found to be greater. It is, in fact, on a large scale approaching to the condition of the streams just mentioned; and although the embanking may prevent the collection of foul mud on the shores, it will not prevent the Thames still being impregnated with the sewage of nearly three millions of people residing in the metropolis, and also of those large populations which live on other parts of its banks and near the communicating streams; and it should be borne in mind that even now large districts require drainage, that the population is constantly increasing, and that before five and thirty years are past we shall have a population of five millions in London alone. The other towns will largely add to this number; and when we look at the opaque condition of Father Thames at the present day—when we find that he has become so dirty that it is necessary to deny him admission into the hospital ship and inhabited dwellings, and consider that in a short time the quantity of pollution will be doubled, we cannot fail to look with alarm at these objections which have been made by the representatives of the London parishes and are likely to have some effect in delaying the improvements which are so imperatively called for, in order to render the chief of our British rivers a thing of beauty and an aid to health, instead of a colossal sewer, unsightly and prejudicial to all who come within its influence.

Mr. James Walker, the engineer, appears to take somewhat the same view of the question as the delegates. He has recently published some "Notes," referring to his early reports on the improvement of the Thames, to be obtained by giving a uniform depth to the river by dredging, and a uniform width by embanking, and urges that the effect of these improvements should be tried before undertaking any great and expensive scheme for sewerage.

Illustrations.

COMPETITION DESIGN FOR LONDON COUNTY HALL.

WE published two or three weeks ago (*Builder*, February 29) a fine perspective drawing of Messrs. Russell & Cooper's design for the London County Hall, made since the conclusion of the competition. We give in this issue reproductions of their principal geometrical drawings submitted in the competition.

The reason why these are more fully illustrated (though not on so large a scale) than other designs is not due to any kind of favouritism, but merely to the fact that this is the only set of drawings which were photographed at leisure, before they were sent in. We had intended to endeavour to photograph as many as possible of the designs before they were sent in. Messrs. Russell & Cooper's drawings we completed some time before the sending-in date, and were the first to be thus sent to us for illustration. It was only subsequent to this that we learned that there was an objection on the part of the County Council architect, in his capacity as one of the assessors, to the previous disclosure of the designs for the purpose of being photographed. On being informed of this, we of course abandoned any further proceedings in that direction, and the remainder of the designs which we selected for illustration had to be rapidly photographed during the limited time available while the drawings were on view. Under these circumstances we confined ourselves to giving a general idea of each design by a large-scale illustration of the principal elevation and the two principal plans. As this design is differently treated, an explanation seemed desirable.

The following extracts from the Report sent in with the design have been furnished by the authors as an explanation of their intentions:—

"The plan of the building is on simple lines and easy of comprehension to the public in order to facilitate to the utmost the primary function of its existence. It possesses on every floor, and from end to end of the building, a direct main public line of communication on which are situated the entrances, staircases, and lifts, and also the inquiry or general offices of the various departments. Separate entrances, one leading direct to that portion of the building reserved for the Council and their work, and others leading to the administrative part, are provided. Provision is also made for the dignified reception of guests when occasion requires. The rooms for the use of members form a suite of apartments of stately character, capable of serving higher functions than the working or committee-rooms; and this suite occupies such a position that its purpose can be recognised both from without and within the building.

The Council-chamber, with its appurtenances, is the heart of the building, and is arranged so that it can be approached at the right points by all its users. The committee-rooms are disposed so that they can be conveniently approached by members and officials from their respective parts of the building. The heads of departments occupy positions where they will be in convenient proximity to each other, the Council-chamber, and the committee-rooms, and in close touch with their subordinates.

Each public department is dealt with as an establishment complete within itself, requiring only such intercourse with its neighbour as may be served by telephone, messenger, or appointment. Each is therefore arranged in a manner best suited to its own convenience, with good light, direct approaches for the public, easy and direct intercommunications, and all accessories. Those departments, or their parts, which are most in contact with the general public are placed on the ground floor, with their public offices near the public entrance.

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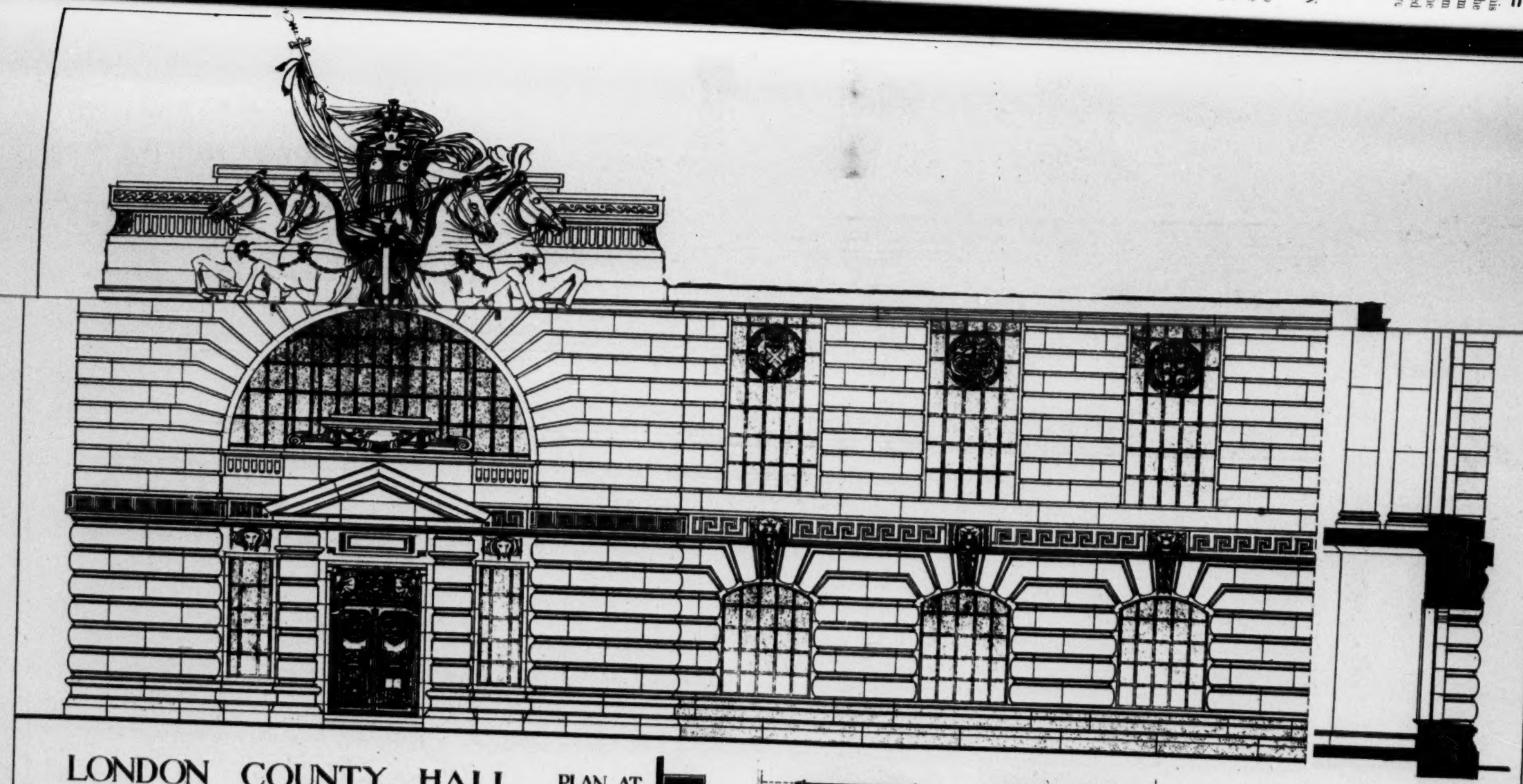

PHOTO-LITHO. SPRAGUE & Co. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

LONDON COUNTY HALL COMPETITION.—Design by Messrs. S. B. Russell & Edwin Cooper, FF.R.I.B.A.

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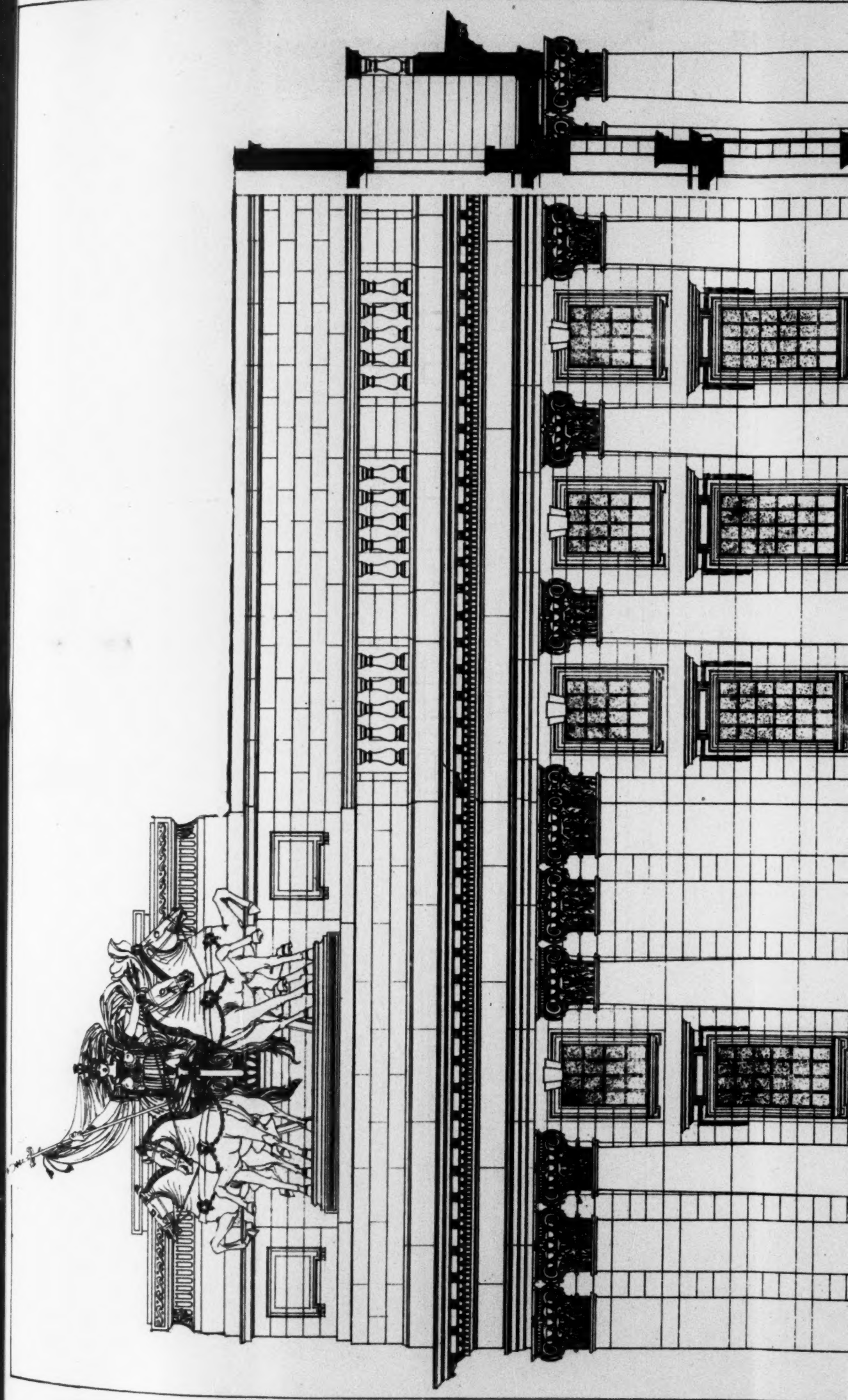
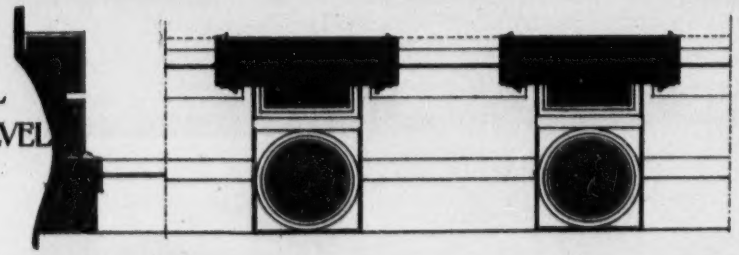


LONDON COUNTY HALL
DETAIL OF RIVER FRONT

SCALE

PLAN AT PRINCIPAL FLOOR LEVEL

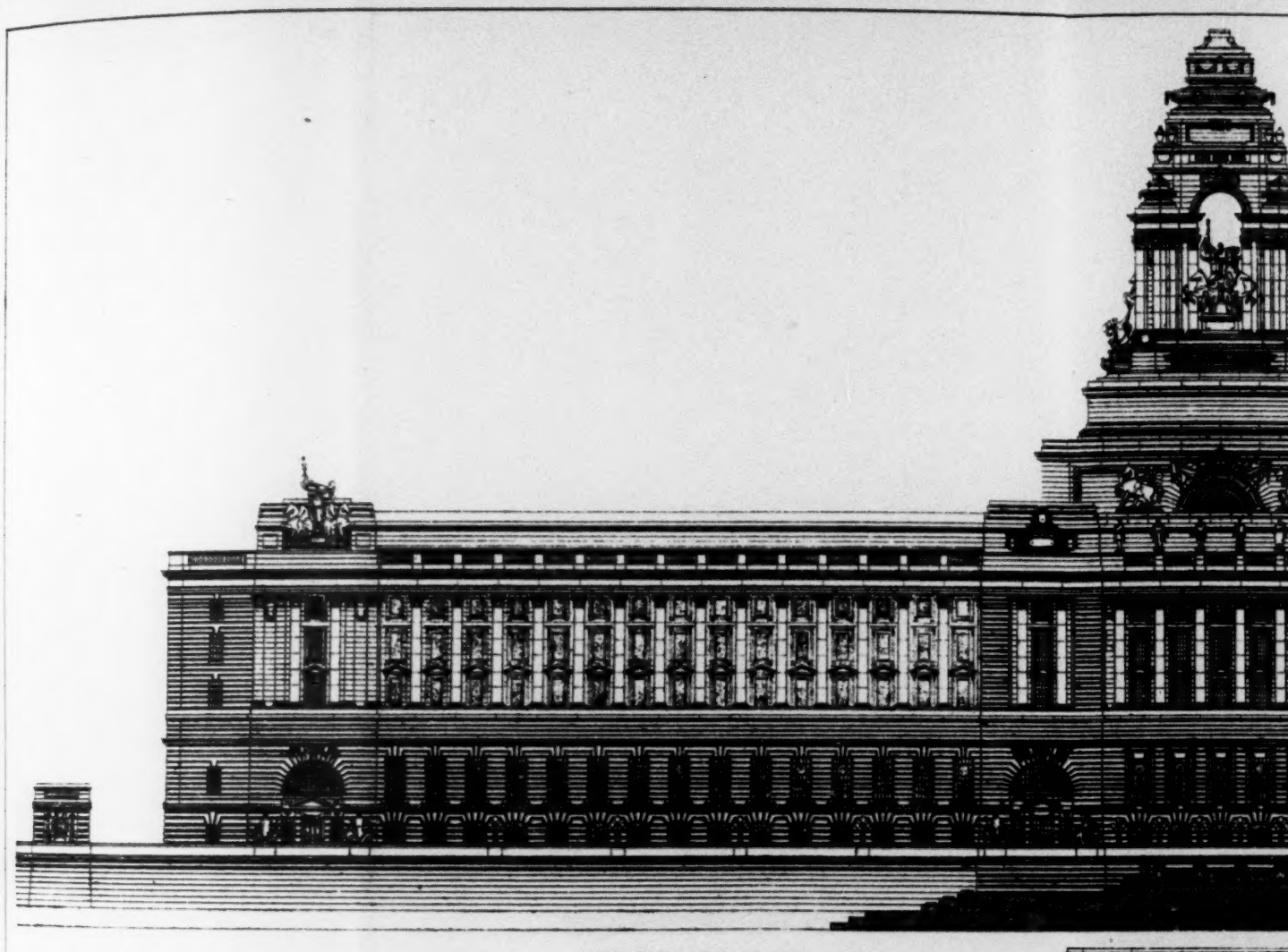


PLAN AT THIRD FLOOR LEVEL

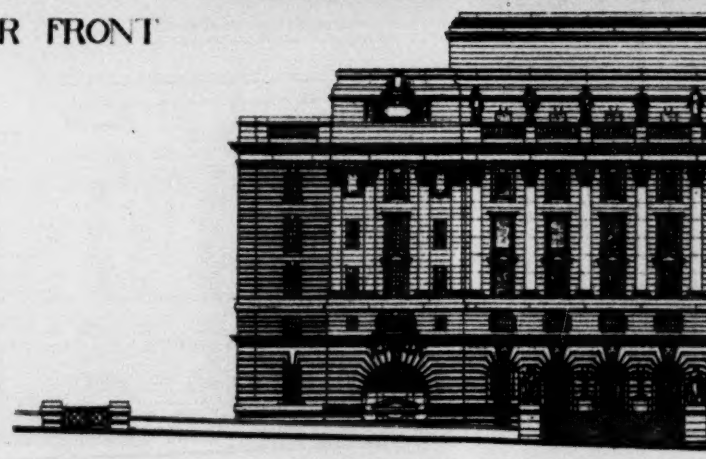
SECTION THRO' FRONT WALL

PHOTO-LITHO. SPRAGUE & Cº LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

LONDON COUNTY HALL COMPETITION.—Design by Messrs. S. B. Russell & Edwin Cooper, FF.R.I.B.A.



RIVER FRONT



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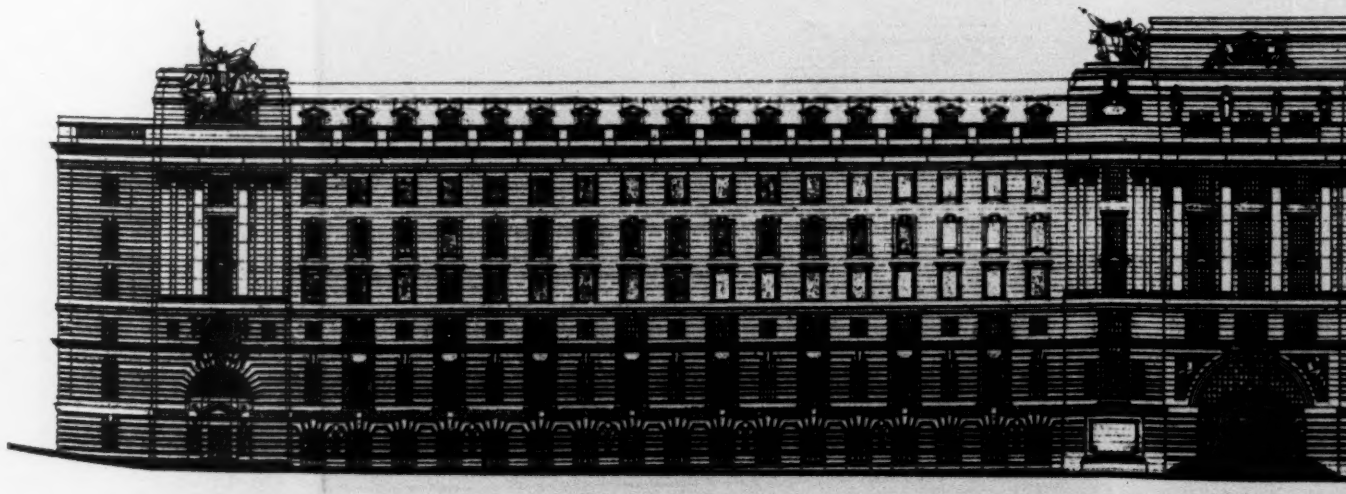

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LONDON COUNTY HALL COMPETITION.—DESIGN BY MES

TER BRIDGE ROAD FRONT

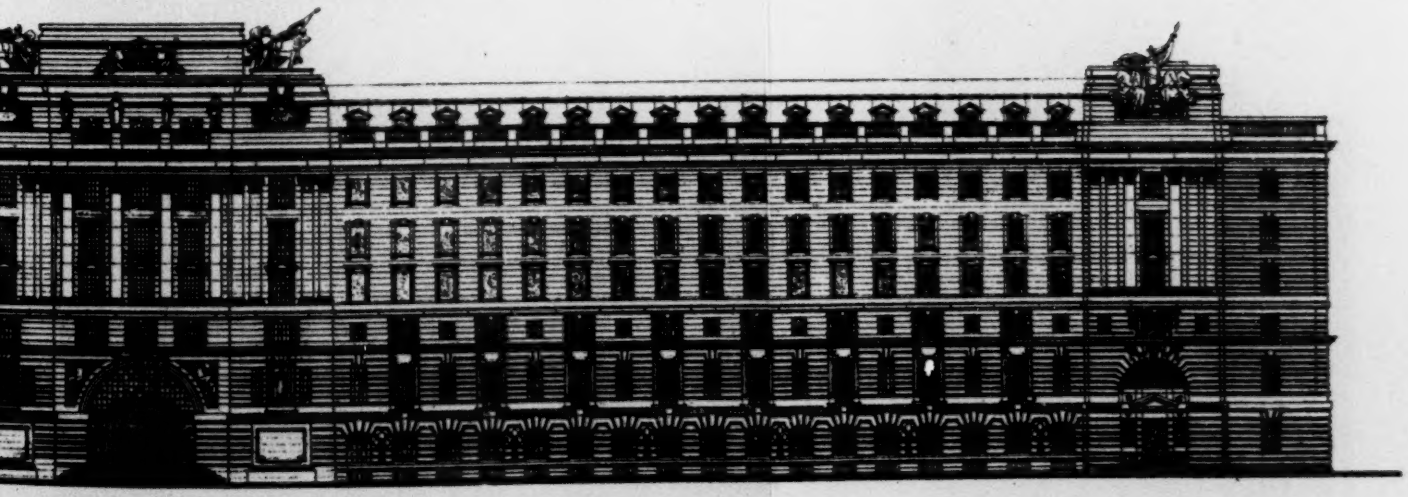

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PHOTO-LITHO. SPRAGUE & CO. LD. 4 & 5 EAST HARDING STREET, FETTER LANE, E.C.

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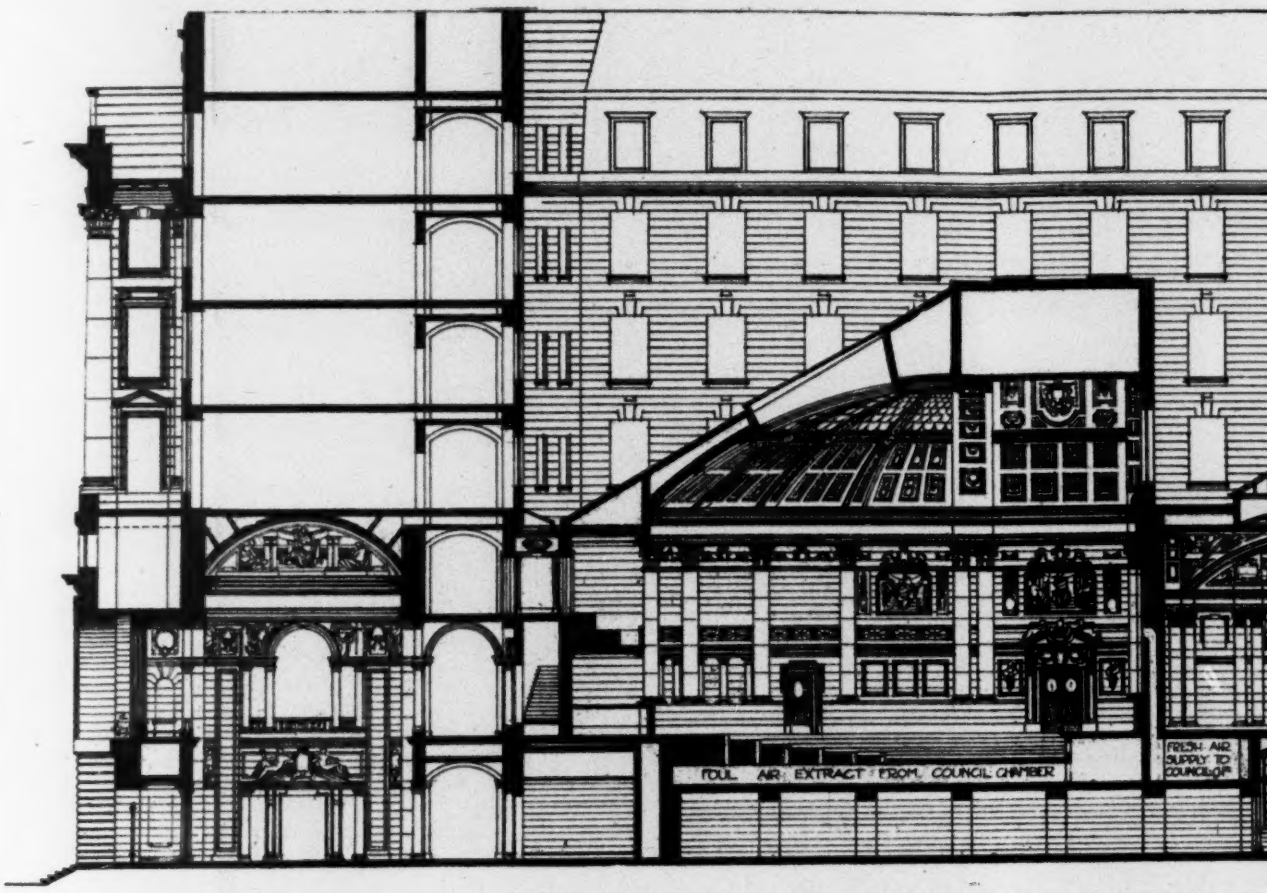

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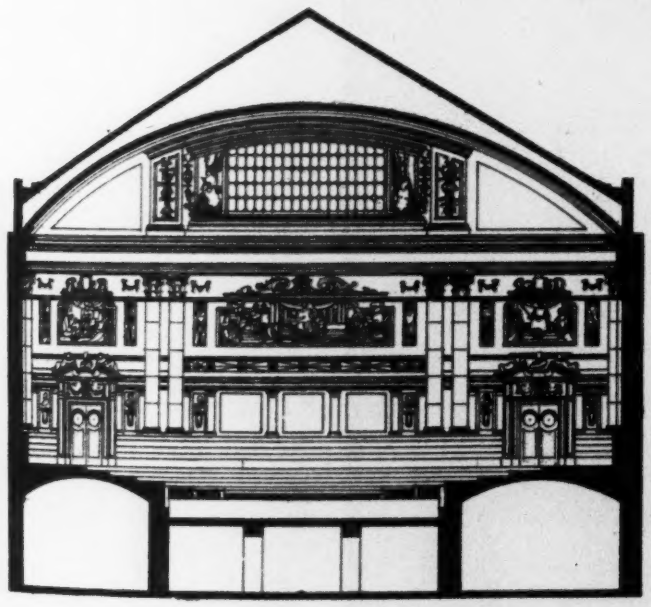

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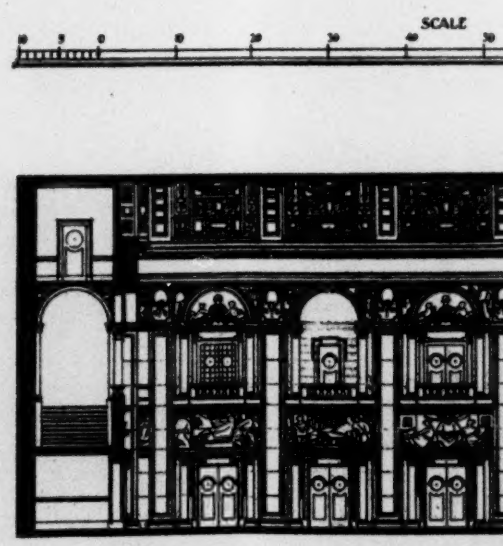

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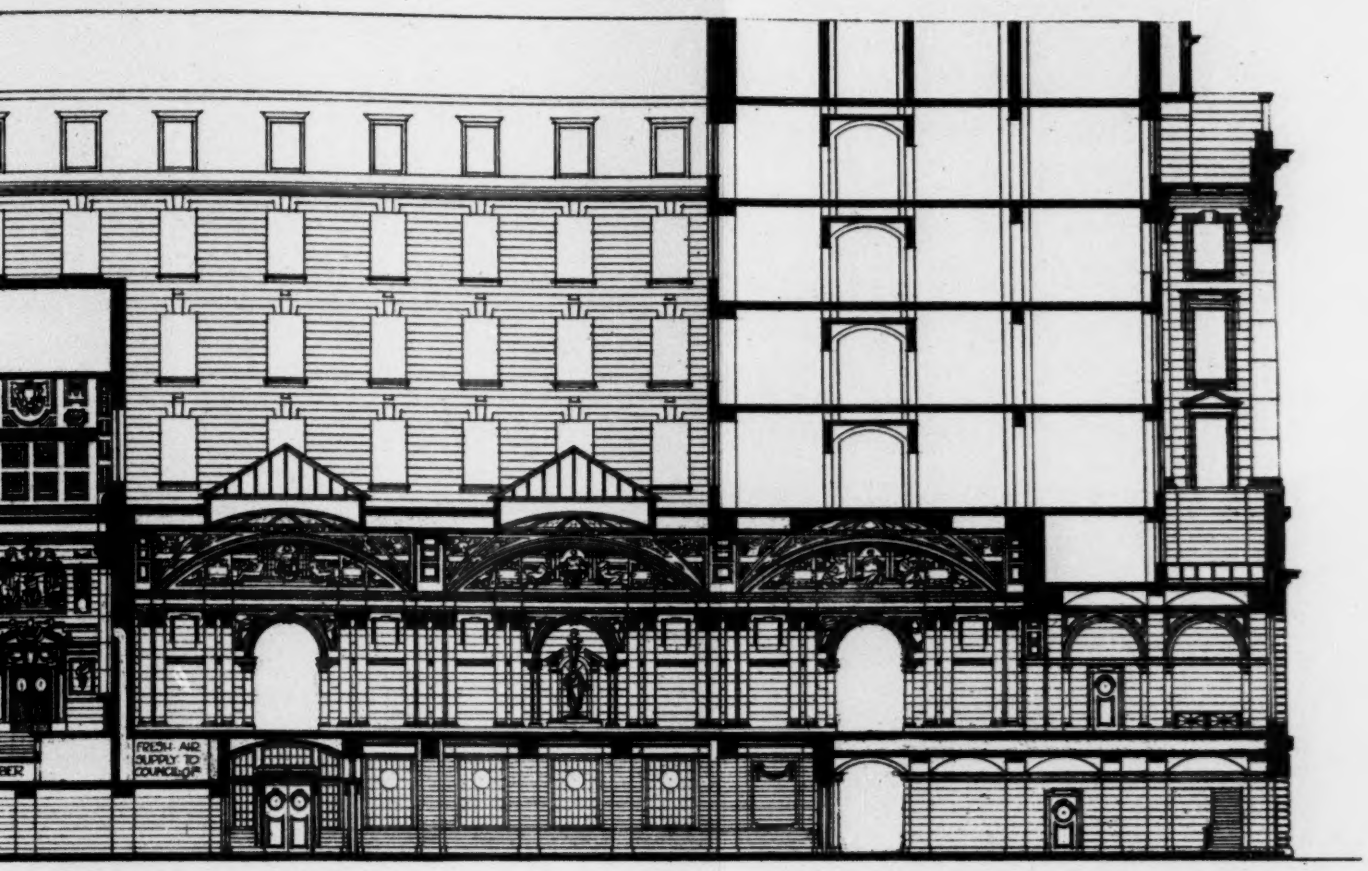

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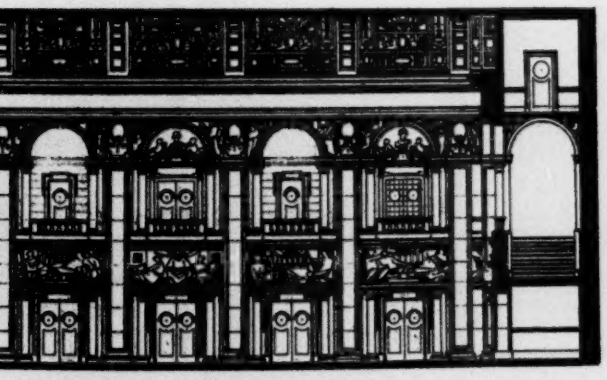

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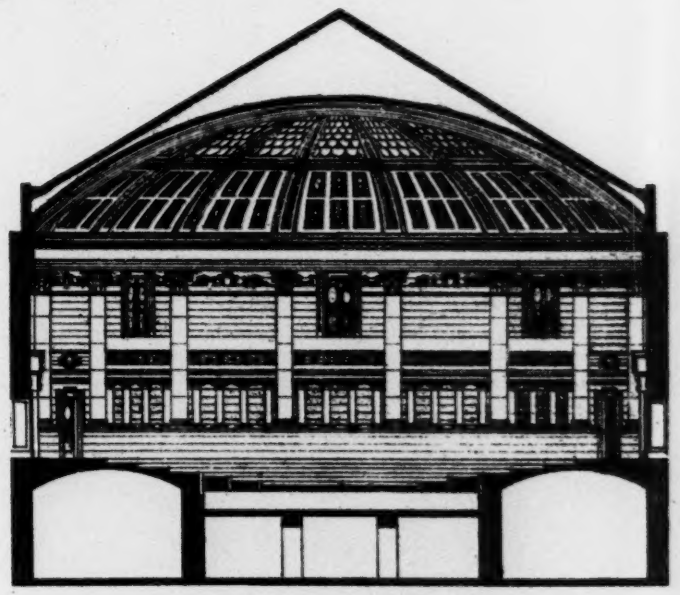
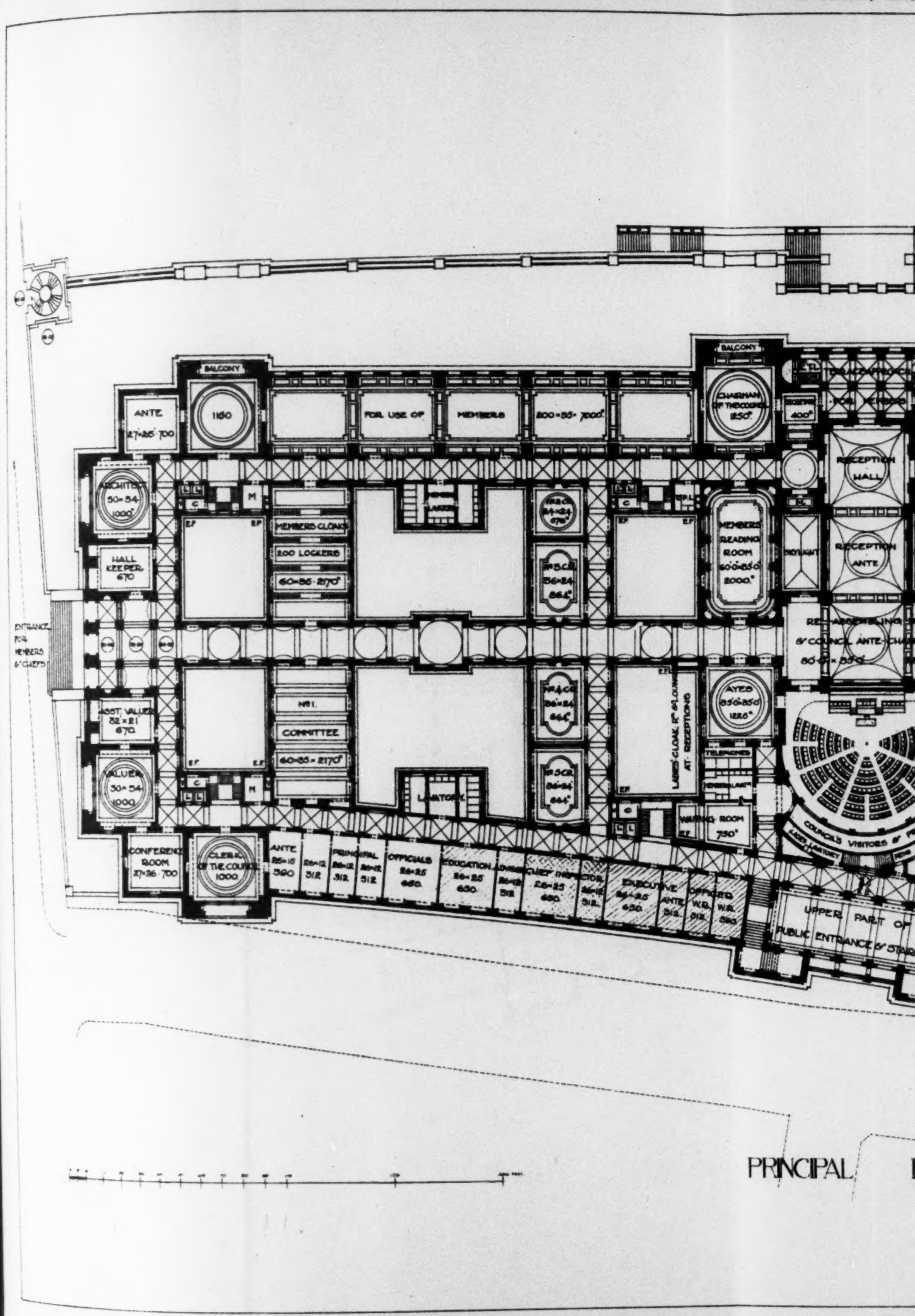


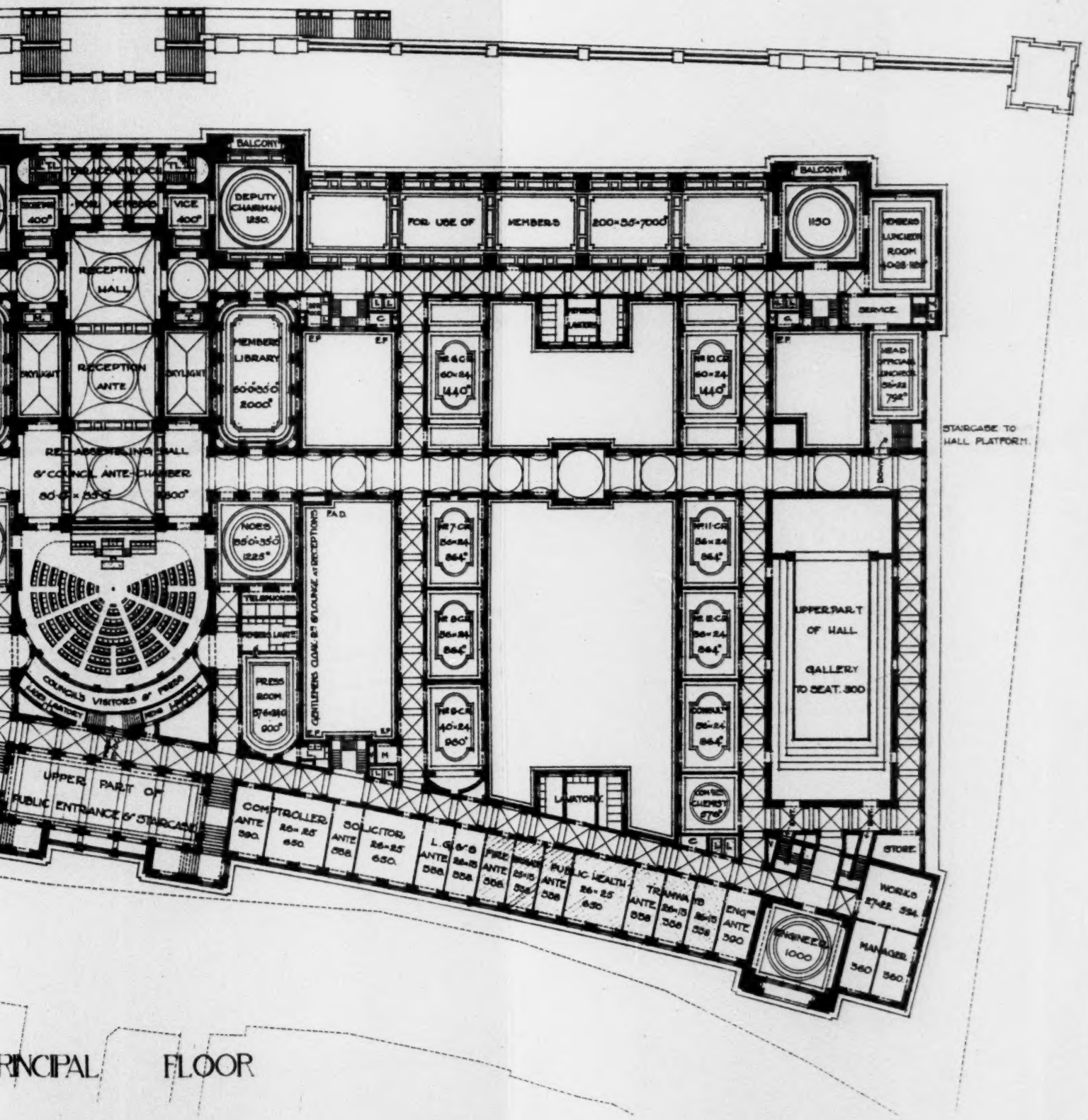
SECTION THRO' COUNCIL CHAMBER
SHEWING GALLERIES

PHOTO-LITHO. SPRAGUE & CO. LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

TION.—DESIGN BY MESSRS. S. B. RUSSELL & EDWIN COOPER, FF.R.I.B.A



LONDON COUNTY HALL COMPETITION.—DESIGN BY MES



RINCIPAL FLOOR

PHOTO-LITHO. SPRAGUE & Co' L.D. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

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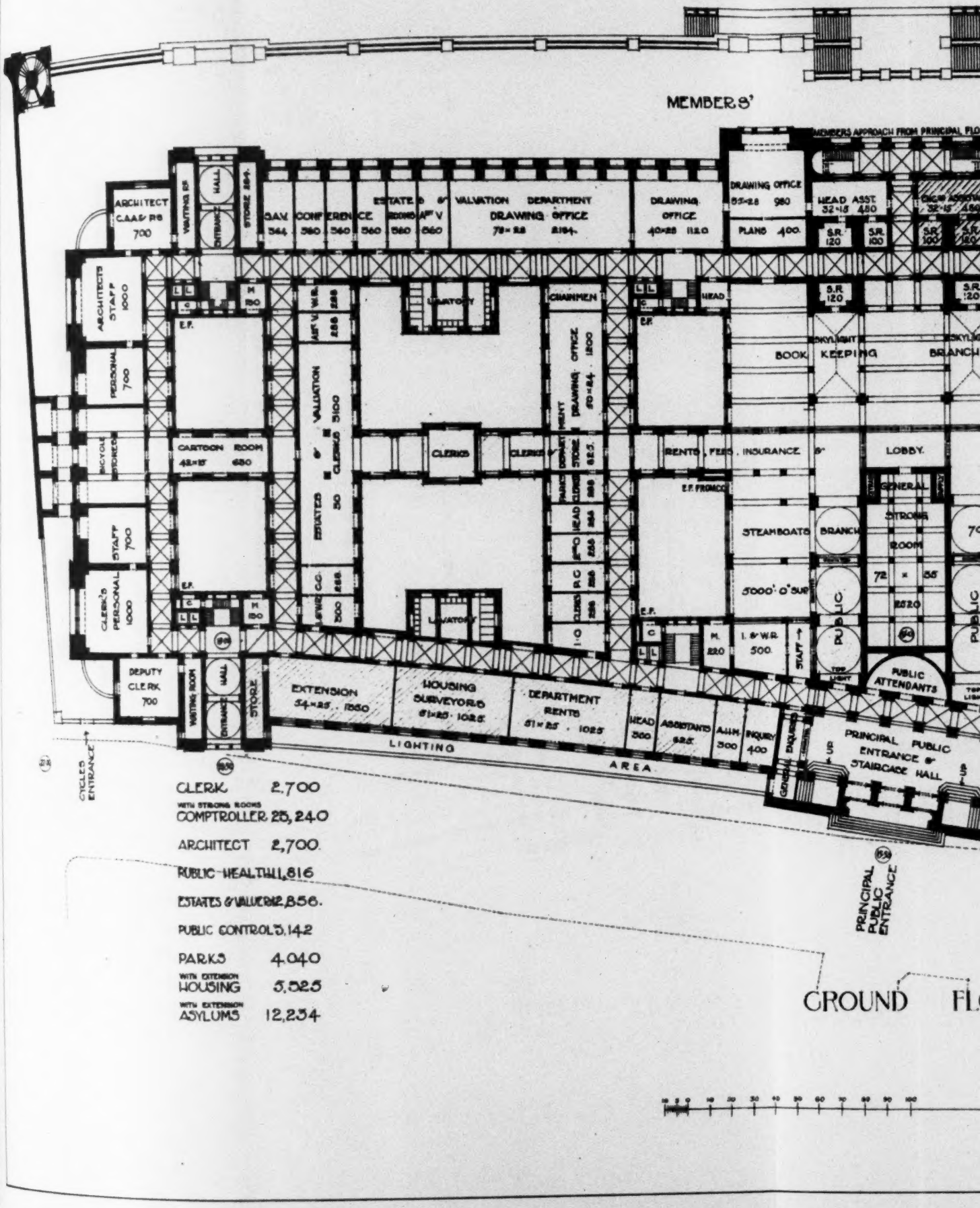

CLERK 2,700
WITH STRONG ROOMS
COMPTROLLER 25,240
ARCHITECT 2,700
PUBLIC HEALTH 11,816
ESTATES & VALUER 12,856
PUBLIC CONTROL 3,142
PARKS 4,040
WITH EXTENSION
HOUSING 5,525
WITH EXTENSION
ASYLUMS 12,234

LONDON COUNTY HALL COMPETITION.—DESIGN BY MESSR

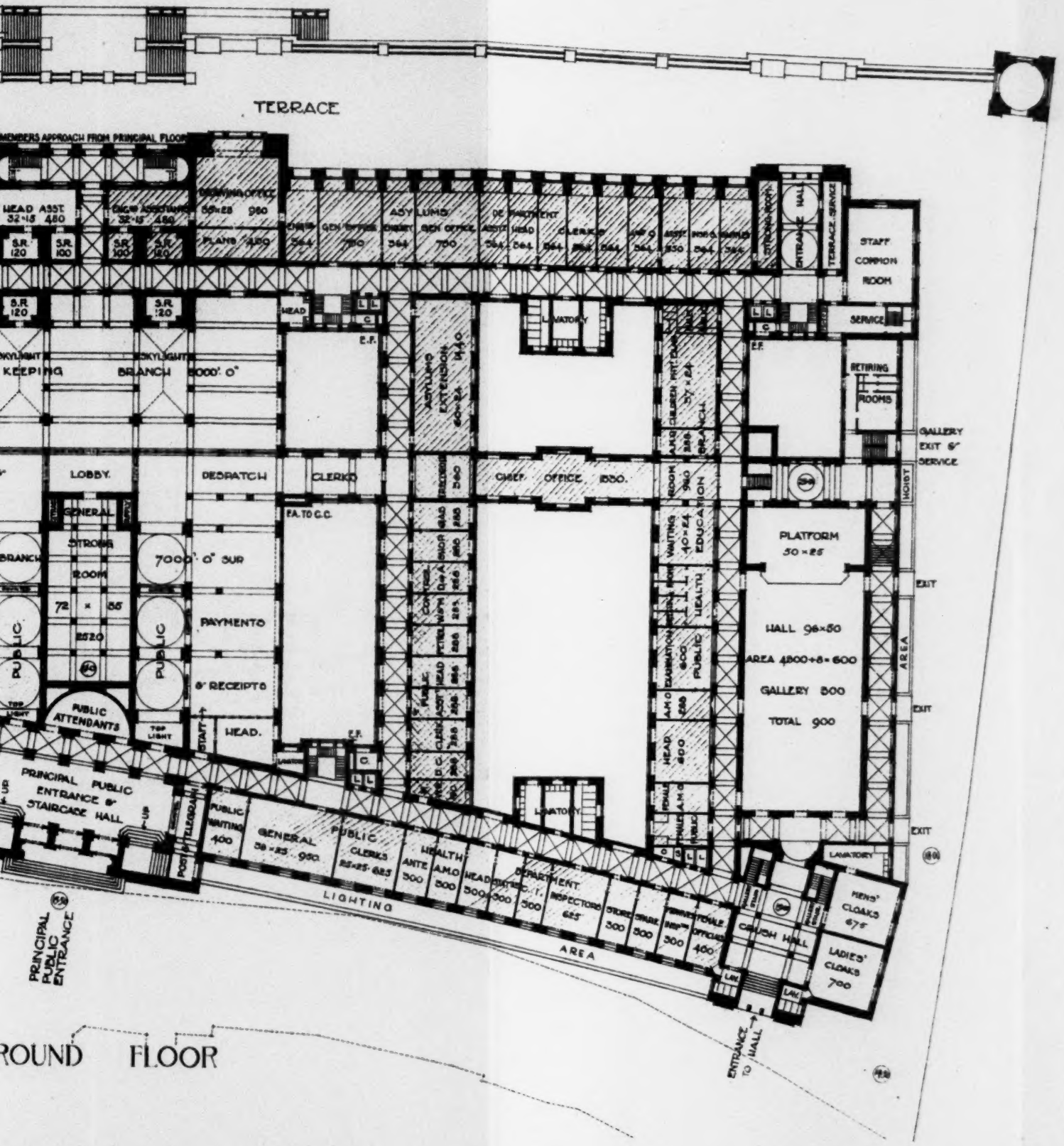

PHOTO-LITHO. SPRAGUE & Co LD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

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approach, and the principal officials occupy positions where they can be easily interviewed and also be in close touch with their chiefs.

The most comprehensive view of the building will be obtained from the Embankment on the opposite side of the river, or from the river itself; and its position, importance, and purpose demand that it shall be stately and imposing, with a restful reserve in its treatment. The style of its architecture must clearly define its civic character and purpose. The great length of its frontage requires proportionate breadth and scale in its parts. The style which embodies these ideals in a complete manner is that inaugurated by Wren, and carried on by Chambers, in their fine buildings on the riverside.

Besides supplying its æsthetic needs, this style also serves the building better than any other from the aspects of utility, and it has been adopted accordingly with careful and restrained expression in the grouping, outline, detail, and sculpture of the composition.

The large central feature is introduced to give additional monumental character to the building, and to mark it as the seat of government of the county when viewed from a distance; but it is not indispensable, and the design could be rendered architecturally complete by including only its lower stages."

METROPOLITAN WATER BOARD.

AT the fortnightly sitting of the Metropolitan Water Board on Friday last week the Finance Committee submitted details of proposed capital expenditure during 1908-9. The total estimate was 149,773*l*. Included in this sum are the following buildings:—Engine-house, Rammey Marsh, 400*l*.; coal bays, sewage works, etc., Kempton Park, 3,000*l*.; coal bays, workshops, etc., Cricklewood, 1,000*l*.; engine and boiler house and conduit, Walton, 6,000*l*.; engine and boiler house, Selhurst, 500*l*.; engine and boiler houses, Nos. 14 and 15, Hammersmith, 1,000*l*.; extension of engine and boiler house, Barn Elms, 100*l*.; extension of fitting shop, Kew Bridge, 150*l*.: total, 12,150*l*. For reservoirs and aqueducts, the following provision is made:—Expenses of investigation, etc., future supply scheme, 300*l*.; storage reservoir, Chingford, 20,000*l*.; covered reservoir, Southfleet, 500*l*.; water-tower, Shooter's Hill, 1,000*l*.; Kempton Park reservoirs and filter-beds, 3,000*l*.; Cricklewood reservoir, 2,000*l*.; Fortis Green reservoir, 4,000*l*.; New River enlargement works, 500*l*.; Walton reservoirs, Sunnyside tunnel and conduit, 18,420*l*.; Honor Oak reservoir, 12,000*l*.; storage reservoir, Island Barn, 2,000*l*.; connexions between various works in Thames Valley, 300*l*.; connexions between Molesey intake and Walton reservoirs, 930*l*.; additional connexion to Staines scheme at Hampton, 3,448*l*.; total, 68,398*l*.—The discussion on the estimates was adjourned.

METROPOLITAN ASYLUMS BOARD.

THE fortnightly sitting of the Metropolitan Asylums Board was held on Saturday.

Joyce Green Hospital.—The Finance Committee submitted the following estimate of cost of the erection of goods reception station, porter's lodge, and staff cottages at Joyce Green Hospital:—Builder's revised tender, including 250*l*. for contingencies, 4,103*l*.: water supply, 197*l*.; architect's and quantity surveyor's charges, 340*l*.; and clerk of works' wages, 110*l*.; total, 4,750*l*. It was agreed to ask the Local Government Board to allow the expenditure to be incurred.

Quantity Surveyors.—Messrs. Bartlett & Ross, 8, Bream's-buildings, W.C., were appointed to take out quantities of the forthcoming cleaning and painting works at the Eastern Hospital, at a commission of 2½ per cent. on the accepted tender.

High Wood School.—The Children's Committee reported having considered the question of providing suitable workroom accommodation for the inmates of the industrial colony for feeble-minded girls at the High Wood School, and it was agreed to throw the junior school buildings into the colony.

South-Western Hospital.—The Hospitals Committee submitted a scheme for the improvement of the boiler work at this hospital, and the engineer suggested a scheme which necessitated the extension of the upper boiler-house, at an estimated cost of 1,975*l*.—It was agreed to ask the Local Government Board to approve of the expenditure.

BOOK RECEIVED.

MODERN PRACTICAL JOINERY. By George Ellis. Third Edition. (B. T. Batsford. 15s.)

LICENSED PREMISES, WOLVERHAMPTON.—New licensed premises are being erected in Queen-street, Wolverhampton. Mr. A. E. Dempster, architect and surveyor, of Birmingham, is responsible for the plans.

Trade Catalogues.

FIREPROOF DOORS, LT., send us a catalogue of their "Dreadnought" fire-resisting doors, which are constructed of stamped steel plates filled with asbestos and special fire-resisting material, and are no thicker than ordinary timber doors. It is claimed by the makers that, owing to their patented method of connecting the plates, perfect rigidity is secured and bulging is entirely obviated. The examples illustrated in this catalogue are suitable for offices, factories, warehouses, hospitals, and theatres.

Messrs. John Bryden & Sons send us their catalogue and price-list of hand-power lifts, in which particulars are given of dinner-service lifts in various styles, luggage and goods lifts, staircase lifts, and vertical lifts for cellars.

Messrs. Bryden & Sons also forward an illustrated price-list of telephones, electric bells, fire-indicator alarms, and accessories. The selection of telephones contained in this little book is a good one, including domestic telephones for use on electric-bell systems, and intercommunication instruments of different types suitable for business houses and public institutions where it is desired to establish means of communication between a number of rooms or departments.

Messrs. F. Whitfield & Co. (Birmingham) send us their catalogue of fire and thief resisting deed-boxes, safes, and doors of various sizes and patterns. The catalogue illustrates a useful series of party-wall doors and strong-room doors, the latter with and without ventilation grille and lobby. Steel strong-rooms and strong-room fittings are among other specialties of this firm.

The Marshall Engraving Company send us some specimens of their work especially intended for advertisement illustrations; reproductions in colour of marbles for instance; also of samples of furniture; with some very well executed monochrome tone-plates of architectural chimney pieces. One of the coloured prints of a specimen of marble is exceedingly well done.

We have received from the Engineering Department of the National Electric Lamp Association of Cleveland, Ohio, U.S.A., a bulletin giving a full scientific description of tungsten lamps. Owing to the high temperature at which the filament works, the light given out is of a pure white colour, and hence it can be used for matching shades of colour. The extended use of osram and tantalum lamps in this country proves the popularity of metal filament lamps, but they are nearly always used with unsuitable shades. We are glad to notice that special attention has been paid in this bulletin to this point. A tungsten lamp inside a long holophane reflector shade of the type illustrated seems to us to be an almost ideal source of illumination.

The Student's Column.

REINFORCED CONCRETE BEAM FORMULÆ.—X.

RECTANGULAR BEAMS WITH SINGLE REINFORCEMENT (*continued*).

(43.) *Practical Application of Formulæ* (1) *to* (8).—

Example (5).—Let us now apply the values obtained to the cross-section of a beam with the breadth $b = 10$ in., the total depth $d = 20$ in., and the effective depth $h = 18$ in.

The thickness of concrete, 2 in., below the centre of the reinforcement being merely for protective purposes we have only to consider the depth h in calculations.

Using the data stated in Section (42), and the values of the ratios calculated therein, we have

Depth of Neutral Axis below Top of Beam,

$$kx = 18 \times 0.\dot{3} = 6 \text{ in.}$$

Cross-sectional Area of Steel,

$$\rho bh = .00\dot{5} \times 10 \times 18 = 1 \text{ square inch.}$$

Safe Moment of Resistance.

Taking moments about the centre of tension in the steel, we have by (7)

$$M_r = bh^2\left[\tfrac{1}{2}c_c \times \left(1 - \frac{x}{3}\right)\right]$$

$$= 10 \times 18^2\left[\tfrac{1}{2}(500) \times .\dot{3}\left(1 - \frac{.\dot{3}}{3}\right)\right]$$

$$= 3240 \times 83.\dot{3} \times .\dot{8}$$

$$= 240{,}000 \text{ inch-pounds.}$$

Taking moments about the centre of compression in the concrete, we have by (8)

$$M_r = bh^2\left[t_s\rho\left(1 - \frac{x}{3}\right)\right]$$

$$= 10 \times 18^2\left[15000 \times .00\dot{5}\left(1 - \frac{.\dot{3}}{3}\right)\right]$$

$$= 3240 \times 83.\dot{3} \times .\dot{8}$$

$$= 240{,}000 \text{ inch-pounds.}$$

Example (5a).—In actual practice the beam considered in the preceding example would be made somewhat stronger in tension, because the steel should be divided into at least three bars, each with the cross-sectional area of not less than .3 sq. in. The smallest diameter satisfying this condition is $\frac{11}{16}$ in. = .37 sq. in., but the smallest stock size is $\frac{3}{4}$ in. = .44 sq. in.

Using three $\frac{3}{4}$-in. bars we have the cross-sectional area of 1.32 sq. in., giving the ratio

$$p = \frac{1.32}{10 \times 18} = .00\dot{7}\dot{3}$$

Then by (6a) we get

$$x = 15 \times .00\dot{7}\dot{3}\left(\sqrt{1 + \frac{2}{15 \times .00\dot{7}\dot{3}}} - 1\right)$$

$$= .11 \times 3.38 = .372$$

Taking stress intensity in the concrete at 500 lb. per square inch as before, we find the resulting stress in the steel by (2):—

$$t_s = 500\,\frac{(1 - .372)\,15}{.372}$$

$$= 500 \times 2.53$$

$$= 12{,}650 \text{ lb. per square inch.}$$

This means that the steel cannot be utilised to the permissible stress of 15,000 lb. per square inch.

If we decided to accept the latter stress as a basis, the resulting stress intensity in the concrete would be by (3)

$$c_c = 15000\,\frac{.372}{(1 - .372)\,15}$$

$$= 15000 \times .0395$$

$$= 592 \text{ lb. per square inch.}$$

This is beyond the limit we have assumed as the safe working stress for concrete in compression, but it is not beyond the stress intensity for concrete having the crushing strength of, say, 2,400 lb. per square inch.

Therefore, with reliable concrete the safe resistance of the beam would be by (7)

$$M_r = 10 \times 18^2\left[15000 \times .00\dot{7}\dot{3}\left(1 - \frac{.372}{3}\right)\right]$$

$$= 3240 \times 110 \times .876$$

$$= 312{,}206 \text{ inch-pounds.}$$

and by (8)

$$M_r = 10 \times 18^2\left[296 \times .372\left(1 - \frac{.372}{3}\right)\right]$$

$$= 3240 \times 110 \times .876$$

$$= 312{,}206 \text{ inch-pounds.}$$

(44.) *Tables and Diagrams for Saving Labour in Calculations.*—As for specified values of c_c, t_s, and m, x is a constant when the economic ratio ρ is adopted, calculations can be simplified by the aid of a table giving values of x and ρ for special values of c_c, t_s, and m.

The preparation of such a table simply involves the use of formulæ (1) and (4) or (5).

Thus for

$c_c =$ 500 lb. per square inch.
$t_s =$ 15,000 lb. per square inch.
$m =$ 15

we get by (1)

$$x = \frac{1}{\left(1 + \frac{15000}{500 \times 15}\right)} = 0.\dot{3}$$

and by (4)

$$\rho = \frac{1}{\frac{2 \times 15000}{500}\left(1 + \frac{15000}{500 \times 15}\right)} = 0.00\dot{5}$$

or by (5)

$$\rho = \frac{.\dot{3}p}{2 \times 15\,(1 - .\dot{3})} = 0.00\dot{5}$$

With economic values of ρ, the actual stress t_s in the steel is the same as the permissible stress.

Thus by (3)

$$t_s = 500\,\frac{(1 - .\dot{3})\,15}{.\dot{3}} = 15{,}000 \text{ lb. per square inch.}$$

Again for

$c_c =$ 600 lb. per square inch.
$t_s =$ 17,000 lb. per square inch.
$m =$ 10

we have by (1)

$$x = \frac{1}{\left(1 + \frac{17000}{600 \times 10}\right)} = 0{\cdot}261$$

and by (4)

$$\rho = \frac{1}{\frac{2 \times 17000}{600}\left(1 + \frac{17000}{600 \times 10}\right)} = 0{\cdot}0046$$

or by (5)

$$\rho = \frac{{\cdot}261^2}{2 \times 10\,(1 - {\cdot}261)} = 0{\cdot}0046$$

By (3)

$$t_s = 600\,\frac{(1 - {\cdot}261)\,10}{{\cdot}261} = 17{,}000 \text{ lb. per square inch.}$$

Columns (1), (2), and (3) of Table XI. have been calculated in this manner for various qualities of concrete and steel.

TABLE XI.—CALCULATED VALUES OF x, "ECONOMIC" VALUES OF ρ, AND ACTUAL VALUES OF t_s FOR VARIOUS QUALITIES OF CONCRETE AND STEEL.

Permissible Stresses.		m	x	ρ	Actual Stress. t_s
c_c	t_s				
Lb. per sq. in.	Lb. per sq. in.				Lb. per sq. in.
700	17000	10	·292	·0060	17000
650			·277	·0053	
600			·261	·0046	
550			·244	·0039	
500			·227	·0033	
650	16000	12½	·337	·0068	16000
600			·320	·0060	
550			·301	·0052	
500			·281	·0044	
450			·260	·0036	
600	15000	15	·375	·0075	15000
550			·355	·0065	
500			·333	·0055	
450			310	·0046	
400			·286	·0038	
550	14000	20	·440	·0086	14000
500			·417	·0074	
450			·391	·0063	
400			·364	·0052	
350			·333	·0042	

Fig. 9 contains two series of curves for various qualities of concrete and steel, those passing from left to right representing values of x for economic values of ρ, and those passing from right to left representing the corresponding economic values of ρ. Diagrams of this kind are even more useful than tables, but for practical work they should be plotted to large scale in order to insure minute accuracy.

Example (6).—For a beam where b = 10 in., h = 18 in., c_c = 500 lb. per square inch, t_s = 15,000 lb. per square inch, and m = 15, the safe moment of resistance by formula (7), taking the value of x from Table XI., or from the bottom scale of Fig. 9, immediately below the intersection of the curve for t_s = 15,000, and m = 15, with the line representing c_c = 500, is

$$M_r = 3240\,(250 \times \dot{3} \times \dot{8},$$
$$= 240{,}000 \text{ inch-pounds.}$$

By formula (8) taking the value of ρ from Table XI., or from the top scale of Fig. 9 immediately above the intersection of the curve for t_s = 15,000, and m = 15, with the line representing c_c = 500,

$$M_r = 3240\,(15000 \times {\cdot}00\dot{5} \times \dot{8})$$
$$= 240{,}000 \text{ inch-pounds.}$$

Example (7).—A beam with the breadth of 12 in. and the effective depth of 18 in., is to be made of concrete and steel, for which c_c = 650, t_s = 17,000, and m = 10. Find the safe moment of resistance.

By (7), taking the value of x from Table XI., or from Fig. 9, we have

$$M_r = 3888\,(325 \times {\cdot}277 \times {\cdot}907)$$
$$= 317{,}455 \text{ inch-pounds.}$$

By (8), taking the value of ρ from Table XI. or from Fig. 9,

$$M_r = 3888\,(17000 \times {\cdot}0053 \times {\cdot}907)$$
$$= 317{,}455 \text{ inch-pounds.}$$

For values of ρ higher than those given by formula (4), values of x must be calculated by (6) or (6a), and the value of t_s by (3), making c_c = the maximum working stress intensity permissible for concrete of the quality to be used. If the permissible stress intensity for the steel to be used were taken as a basis in conjunction with values of ρ greater than those given by formula (4), the value of c_c calculated by (2) would be higher than that consistent with safe design, except for steel of low tensile strength used in conjunction with concrete of high compressive strength. In ordinary practice the best course is to take the permissible stress intensity for the concrete as a basis, and only to adopt the converse method of working in cases where some special reason exists for its employment.

To simplify calculations permitting any value for ρ to be applied to concrete and steel of constant quality, we require figures different from those in Table XI. and Fig. 9. For instance, let us say we wish to have the option of using a proportion of steel represented by either of the ratios ρ = 0·01 or ρ = 0·02 for a beam where the permissible stress intensities of the concrete and the steel are 500 lb. per square inch and 15,000 lb. per square inch respectively, the value of m being 15.

Then by formula (6a) the values of x will be

For ρ = 0·01

$$x = 15 \times {\cdot}01\left[\sqrt{1 + \frac{2}{15 \times {\cdot}01}} - 1\right] = 0{\cdot}41789.$$

For ρ = 0·02

$$x = 15 \times {\cdot}02\left[\sqrt{1 + \frac{2}{15 \times {\cdot}02}} - 1\right] = 0{\cdot}5306.$$

These increased values, as compared with $x = 0{\cdot}\dot{3}$ given by (1) for $\rho = 0{\cdot}00\dot{5}$, have an important influence upon the stress developed in the steel, and upon the sectional area of concrete in compression, as will be seen by Example (11).

Example (8).—In a beam with the dimensions b = 10 in. and h = 18 in., the area bkx is 10 × (18 × ·41789) = 75·22 sq. in. for ρ = 0·01, and 10 × (18 × ·5306) = 95·5 sq. in., as compared with 10 × (18 × ·3) = 60 sq. in. for $\rho = 0{\cdot}00\dot{5}$.

On the other hand, the arm of leverage $h\left(1 - \frac{x}{3}\right)$ of the internal force $\frac{1}{2}c_c bkx$ is reduced from $18\left(1 - \frac{\dot{3}}{3}\right)$ = 16 in. for $\rho = 0{\cdot}00\dot{5}$; to $18\left(1 - \frac{{\cdot}41789}{3}\right)$ = 15·5 in. for ρ = 0·01; and to $18\left(1 - \frac{{\cdot}5306}{3}\right)$ = 14·8 in. for ρ = 0·02.

Therefore we find by (3) that instead of 15,000 lb. per square inch—the permissible stress intensity—the steel is only able to develop

For ρ = 0·01

$$t_s = 500\,\frac{(1 - {\cdot}41789)\,15}{{\cdot}418} = 10{,}447{\cdot}2 \text{ lb. per square inch.}$$

For ρ = 0·02

$$t_s = 500\,\frac{(1 - {\cdot}5306)\,15}{{\cdot}5306} = 6{,}634 \text{ lb. per square inch.}$$

By formula (8) the moment of resistance about the centre of compression in the concrete is:

For ρ = 0·01 and t_s = 10,447·2 lb. per square inch.

$$M_r = 10 \times 18^2\left[10447{\cdot}2 \times {\cdot}01\left(1 - \frac{{\cdot}41789}{3}\right)\right] = 291{,}333 \text{ inch-pounds.}$$

For ρ = 0·01 and t_s = 6,634 lb. per square inch.

$$M_r = 10 \times 18^2\left[6{,}634 \times {\cdot}02\left(1 - \frac{{\cdot}5306}{3}\right)\right] = 353{,}641 \text{ inch-pounds.}$$

By formula (7) the moment of resistance about the centre of tension in the reinforcement is:

For x = 0·41789

$$10 \times 18^2\left[\tfrac{1}{2}\,500 \times {\cdot}41789\left(1 - \frac{{\cdot}41789}{\dot{3}}\right)\right] = 291{,}333 \text{ inch-pounds.}$$

For x = 0·5306

$$10 \times 18^2\left[\tfrac{1}{2}\,500 \times {\cdot}5306\left(1 - \frac{{\cdot}5306}{\dot{3}}\right)\right] = 353{,}641 \text{ inch-pounds.}$$

The figures in Table XII. calculated by formula (3) and (6) permit considerable simplification of formulæ (7) and (8) by the substitution of ready calculated values.

Fig. 10 contains curves for various qualities of concrete and steel giving values of x for different values of ρ, and two curves passing from right to left showing the reduction in the value of t_s consequent upon the increase of ρ.

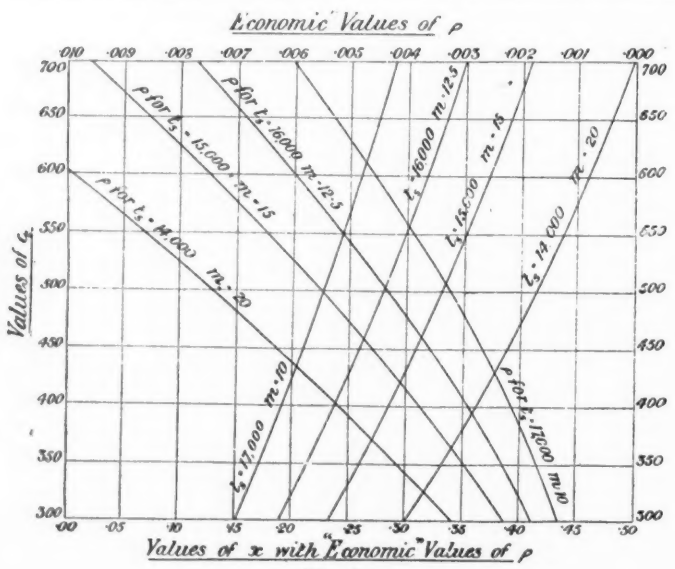
Economic Values of ρ
Values of x with "Economic" Values of ρ
Values of c_c
ρ for t_s = 15,000 m = 15
ρ for t_s = 16,000 m = 12·5
ρ for t_s = 14,000 m = 20
t_s = 17,000 m = 10
ρ for t_s = 17,000 m = 10

Fig. 9.

This diagram gives values of x for four qualities of concrete and steel as denoted by the values of t_s and m written along the curves and for compressive stresses from 300 lb. to 700 lb. per square inch in the concrete. The values of x are based upon the "economic" values of ρ, which are also given by the diagram for the same four qualities of concrete and steel.

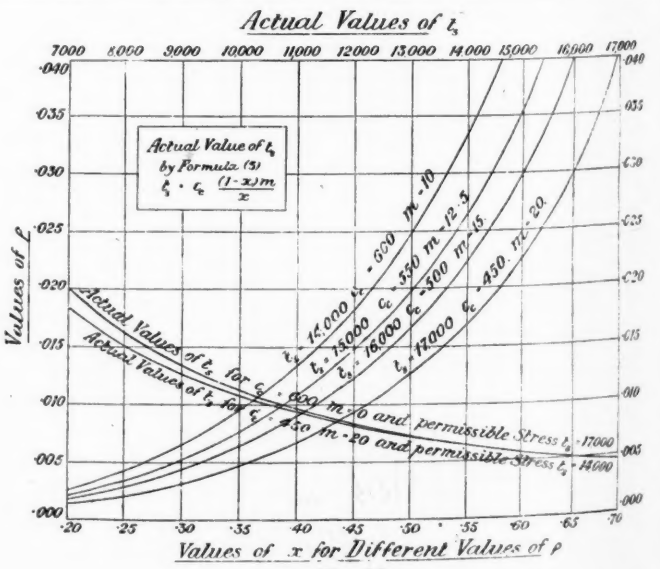
Actual Values of t_s
Values of ρ
Values of x for Different Values of ρ
Actual Value of t_s by Formula (5)
Actual Values of t_s for c_c = 600 m = 10 and permissible Stress t_s = 17000
Actual Values of t_s for c_c = 450 m = 20 and permissible Stress t_s = 14000

Fig. 10.

This diagram gives values of x for all values of ρ from ·00 to ·040 for four qualities of concrete and steel as denoted by the values of t_s, c_c, and m written along the curves, the values of t_s representing the permissible stresses, the actual stresses being also given by the diagram for two qualities of concrete and steel.

For practical use diagrams of this kind should be plotted to large scale in order to insure minute accuracy.

TABLE XII.—CALCULATED VALUES OF x AND t_s FOR DIFFERENT VALUES OF ρ IN CONNEXION WITH VARIOUS QUALITIES OF CONCRETE AND STEEL.

Permissible and Actual Stress in Concrete, c_c	Permissible Stress in Steel, t_s	m	ρ	x	Actual Stress in Steel, t_s
Lb. per sq. in.	Lb. per sq. in.				Lb. per sq. in.
			·0046	·261	17000
			·008	·328	12300
			·010	·358	10760
600	17000	10	·015	·418	8360
			·020	·463	6960
			·025	·500	6000
			·030	·530	5320
			·0052	·301	16000
			·008	·358	12315
			·010	·390	10760
550	16000	12½	·015	·453	8300
			·020	·500	6875
			·025	·538	5900
			·030	·568	5230
			·0055	·333	15000
			·008	·384	12000
			·010	·418	10450
500	15000	15	·015	·483	8030
			·020	·530	6650
			·025	·569	5680
			·030	·600	5000
			·0063	·391	14000
			·008	·428	12000
			·010	·463	10440
450	14000	20	·015	·530	7980
			·020	·580	6520
			·025	·618	5560
			·030	·650	4850

Obituary.

MR. S. P. REES.—We regret to announce the death last Sunday, from acute bronchitis, of Mr. S. Powlson Rees, Associate of the Institute of Architects, of which he became a member after passing the examination for Associateship, 1897. Mr. Rees was for many years with the late Mr. William White, and subsequently was in the offices of Mr. T. G. Jackson, R.A., the late Mr. Brydon, and in H.M. Office of Works.

MR. WAREHAM HARRY.—Mr. G. E. Wareham Harry, who had been Borough Surveyor of Cambridge for twenty years, died on the 13th inst. He was formerly Surveyor at Harrogate, and had also been engaged at Huddersfield and in Wiltshire, and in his early days was associated with Sir Robert Rawlinson.

General Building News.

PROPOSED CHURCH RESTORATION, SKIPTON.—A scheme has been prepared by Messrs. Austin & Paley, architects, of Lancaster, for the restoration of the Skipton Parish Church. The scheme comprises new vestries and entrance-porch, lavatory and heating chamber, a north transept, alterations to floors at the west-end of the nave and the aisles, lowering the floor over the heating-chamber, and removing the side and west galleries, and some minor improvements. The estimated cost is 1,800*l.*

ST. EDMUND'S, FOREST GATE.—With the opening of the new nave this church has advanced a stage further towards completion. The church was designed by Messrs. J. E. K. & J. P. Cutts, and provides accommodation for nearly 700 worshippers. The clearstory and the permanent roof of the nave have yet to be added.

ST. PETER HUNGATE, NORWICH.—A sum of 700*l.* has been spent on the restoration of this church. Mr. Weir, Architect to the Society for the Protection of Ancient Buildings, had charge of the work.

NEW CHURCH, PRESTWICK, N.B.—The old parish church of Monkton and Prestwick having become too small to meet the requirements of the increasing population of the district, an additional church is being erected in the parish. The church, which is being built of Ballochmyle red stone, will have seating accommodation for 500, and the cost is expected to be between 5,000*l.* and 6,000*l.* Mr. P. Macgregor Chalmers, Glasgow, is the architect, and the principal contractors are Messrs. Armour & Son, Ayr, masons; Messrs. D. & J. Meikle, Ayr, joiners; and Messrs. M'Ilwraith, Cowan, & Co., Ayr, plumbers.

METHODIST CHURCH, CHIRK BANK, DENBIGH.—A new church has been erected at Chirk Bank by the members of the United Methodist Free Church at Preesgweene. The building comprises a church and schoolroom, the former being capable of seating 250 persons, and the latter 200. A minister's vestry is also provided, together with the customary out-offices. The whole scheme has been carried out at a total cost of 1,400*l.*, the architects being Messrs. Shayler & Ridge, of Oswestry, and the builders Messrs. George Williams & Son, of Penley.

DISTRICT CHURCH, HARPENDEN, HERTS.—A new district church has been erected in the Bowling Alley district at Harpenden. It is from the designs of Messrs. Eden & Hodgson, and provides seating accommodation for 350 people.

WESLEYAN METHODIST CHURCH, MIDDLESBROUGH.—A new Wesleyan church has been erected in this town at a cost of about 4,700*l.* The building has been constructed of red Commondale bricks, with terra-cotta dressings, and will accommodate 700 people, 430 on the ground floor and 270 in a gallery. There are also a church parlour, minister's vestry, and three other vestries, with connexions with the existing school premises. The architects are Messrs. Danby & Simpson, of Leeds, and the principal contractors Messrs. Bastiman Brothers, builders, and Messrs. Thompson Brothers, joiners.

CONGREGATIONAL CHAPEL, NEWARK.—A new Congregational chapel has been erected on the London-road, Newark. The chapel has been built to the designs of Mr. Henry Harper, of Nottingham, and is of local red brick, with dressings of stone.

SECONDARY SCHOOL, CASTLEFORD.—On the 8th inst. the foundation-stone of the Castleford Secondary school, in Healdfield-road, was laid. The site which is 8½ acres in extent, has cost 3,000*l.*, and the contracts for the buildings amount to about 12,000*l.* The school is to provide accommodation for 300 boys and girls. It will include a pupil-teachers' centre. Mr. W. S. Braithwaite, of Leeds, is the architect of the work.

NEW SCHOOL, CARDIFF.—New school buildings are being built in connexion with Nazareth House, Cardiff, from plans prepared by Mr. E. W. M. Corbett. Mr. George Beames, of Cardiff, has secured the contract, the work being estimated to cost between 5,000*l.* and 6,000*l.*

ADULT SCHOOL, TAUNTON.—A new adult school has been opened in the district of Rowbarton. The building is composed of timber frame, lined inside with varnished match-boarding, with a flooring of wood blocks. It was erected by Mr. W. Potter, builder, of Rowbarton, the plans having been prepared by Mr. W. G. Potter.

EDINBURGH COLLEGE OF ART.—The erection of that portion of the new College of Art which occupies the site of the old cattle market in Lauriston is nearing completion. The remainder of the site is still used for the sale of cattle, and when it is vacated the work of erecting the other portion of the building will be commenced. The building will be 350 ft. in length by 130 ft. in depth. The principal front faces Lauriston-place. The whole of the west side of the building on the ground floor is taken up with modelling-rooms, lecture-room, elementary modelling-room, workshop, and rooms for life classes for men and women. Here, also, is a large open court, in which it is proposed to place a glass pavilion for "plein" air painting; a special passage is arranged for the entrance of horses and other animals to the pavilion. On the east side of the entrance-hall are office, director's room, and council-room, while the remaining apartments on that side will be used for drawing and painting. These rooms comprise apartments set aside for preparatory and antique drawing, painting, decoration, and application of design. The main feature of this part of the building is the large sculpture-hall, which embraces the first and second floors, and which is so arranged, by means of open arcades, that a full view of the hall and its contents will be obtained from the surrounding corridors on both floors. This sculpture-hall is about 70 ft. long by 40 ft. wide, and is lit from the roof. Owing to the slope of the ground, ample space was found on the north side of the building for the formation of a basement. Among the apartments placed in the basement are a large cloakroom on each side for men and women, and common rooms for the use of male and female students; these rooms, measuring 37 ft. by 25 ft., are fitted with cooking ranges. The remaining rooms in the basement will be used for classes. From the entrance-hall a double stone staircase, 30 ft. square, lit from the roof, rises to the second floor. The staircase walls are embellished with pilasters, and the intermediate spaces are available for mural paintings, the proposal being that the students themselves should decorate these parts. Immediately at the top of the staircase there is a hall, which will be used for exhibitions and receptions. To the west of this, facing the south, are arranged the library, the professors' and assistant teachers' common-rooms. On the east there are the elementary and advanced architecture class-rooms, while the whole of the north front is devoted to painting and drawing. These north rooms comprise apartments for painting from the nude for men, and painting from the nude for women, and drawing from the nude; the large room in the centre being intended for drawing from the life and composition. Attached to each of these rooms is a dressing apartment for the model. The north-west portion of the floor consists of six post-graduate studios, and adjoining is the director's studio. There are also throughout the building professors' rooms adjacent to the classrooms. The building, which is being erected in red stone, with green slated roofs, the high-pitched roofs at the centre and corners being treated with ornamental leadwork, will, together with its equipment, cost probably about 60,000*l.* Mr. J. M. Dick Peddie is the architect of the work.

CHURCH HALL, BRIGHTON.—A church hall is being built in connexion with the Lewes-road Congregational Church, Brighton. Mr. Thomas Garrett is the architect of the work, the builders being Messrs. Saunders Brothers. The total cost of the scheme is estimated at 1,100*l.*

ENLARGEMENT OF THE INFIRMARY, ROCHDALE.—The first instalment of the scheme of extensions at the Rochdale Infirmary has been completed by the opening of the new quarters for the nurses. The building comprises sixteen bedrooms, a dining-room, a sitting-room, and bath and lavatory accommodation. The cost of the work, including furnishing and the erection of a boundary wall, is expected to amount to 5,000*l.* Messrs. S. Butterworth & Duncan, of Rochdale, are the architects.

FACTORY, PITHAY, BRISTOL.—Messrs. J. S. Fry & Sons, Ltd., have just completed another building, which makes their eighth factory. The new building is situated in the Pithay, and is linked up with the existing factories by means of bridges. The structure is of red brick, lined with white glazed bricks. Mr. G. H. Oatley is the architect, and Mr. H. Dowling clerk of the works, and the whole has been carried out under the supervision of Mr. Claude B. Fry.

BUSINESS PREMISES, MANCHESTER.—New business premises are to be erected on a site at the corner of Market-street and Mosley-street, Manchester. They will comprise shops on the ground with rooms for offices and stock-rooms above. Messrs. J. W. Beaumont & Sons, of Manchester, are the architects.

INSURANCE OFFICES, BIRMINGHAM.—New offices have been opened by the London and Lancashire Insurance Company at the corner of Bennetts Hill and New-street, Birmingham. The architects for the building were Messrs. Riley & Smith, of Birmingham, and the general contractors Messrs. William Sapcote & Sons, of Birmingham. The sculpture and stone has been executed by Mr. Robert Bridgeman, of Lichfield, the steelwork supplied by Messrs. E. C. & J. Keay, of Darleston, and the fire-resisting floors have been constructed by the Fram Fireproof Company, of Rugby. The woodwork is of mahogany, and has been carried out by Messrs. H. H. Martyn & Co., of Cheltenham, and the fibrous plasterwork, electroliers, window lettering, etc., the work of the Birmingham Guild of Handicraft. Messrs. Doulton & Co. supplied the sanitary fittings, the Easton Lift Company, of Westminster, S.W., erected the electric passenger lift, and Messrs. Diespeker, Ltd., of London, have laid some of the mosaic pavings, etc. The lift enclosure and stair balustrade is by Messrs. Thomas Brawn & Co., of Birmingham, casements, leaded lights, and skylights by Messrs. Henry Hope & Sons, of Birmingham, and the ornamental lights (lead) by Messrs. Harvey & Ashby, of Birmingham.

NEW BUILDINGS, S. ALBANS GRAMMAR SCHOOL.—The new buildings in connexion with the above school were opened on Friday, the 13th inst. The buildings, which have been erected at a cost of about 10,000*l.*, join the Old Gateway to the Monastery, and are in close proximity to the Cathedral. The style adopted is early Perpendicular, execution in flint, with Ancaster stone dressings. The assembly-hall has open-timber traceried oak roof and oak gallery supported on carved brackets. The architect is Mr. Percival C. Blow, an old pupil of the school, the builders being Messrs. Ekins, Ltd., of Hertford.

TRADE NEWS.

THE Falkirk Iron Company have secured the contract for installing the cooking apparatus in all the kitchens at the Edinburgh Exhibition. The apparatus consists of two large central cooking ranges, three roasting

ovens, three stock-pot stoves, two fish friers, three charcoal grills, seven gas toasters, nine hot closets and carving tables, two roast-meat closets, one battery of jacketed pans, and three steam kettles. They will also equip the bakery with large baking ovens, grills, etc., and supply all the sinks, dish-washing machines, and cutlery renovators in the sculleries, etc. They have been developing this branch of their business for some time, and have recently secured, among other large contracts, those for Dr. Kenworthy's Hydro, Southport, Cumberland County Asylum, and Earl Grey's College, Bloemfontein, South Africa.

A large clock is to be placed in the parish church of Sutton-on-the-Hill, Derbyshire, which will strike hours on the tenor bell and show time on one large dial. The work has been placed in the hands of Messrs. John Smith & Sons, Midland Clock Works, Derby, who will make the clock generally on the lines laid down by the late Lord Grimthorpe. The same firm made the clock in the neighbouring church of Boylestone about thirty years ago.

Stained Glass & Decoration.

MEMORIAL WINDOW, ETC., BRANCASTER.—In the parish church, Brancaster, a stained-glass window, a clock, and an organ-chamber were recently dedicated as memorials to the late Mrs. E. S. Daubeney. The window has for its subject "Our Lord in Glory" and the "Te Deum," and was constructed by Messrs. Burlison & Gryls, of London. The organ-chamber is built on the north side of the chancel, and was designed by Messrs. W. O. & O. P. Milne, of London. The contractors for the organ-chamber and the stonework of the window were Messrs. C. Powell & Sons, of Brancaster, who employed Mr. Henry Beaver, of Burnham Market, for the stonework. In addition to the works already mentioned, part of the chancel floor has been relaid and new steps added, this work being carried out by Mr. W. F. Wright, of Brancaster.

THEATRE CEILINGS.—Mr. A. C. Conrade, whose fine illustrations in our plates from time to time will be remembered by our readers, is at present engaged in painting the ceiling and other panels at the new theatre at Stockton-on-Tees, with symbolical subjects of classical figures. Last year Mr. Conrade painted the tympanum and other panels in the Empire Theatre, Sunderland; the decoration consisting partly of large-scale figures of Shakspeare, Mozart, Sheridan, Garrick, etc. He has also recently painted the ceiling of the Opera House at Middlesbrought with a subject representing Faust and Mephistopheles. Mr. Conrade is able to treat both figure subjects and architectural subjects with equal success—a combined talent not very common.

Sanitary and Engineering News.

KINGSWOOD SEWERAGE.—The Local Government Board have approved of and sanctioned a loan for 13,000*l.* for carrying out the scheme of sewerage and sewage disposal for that portion of the urban district of Kingswood which drains towards Warmley, and known as the Warmley section, which, together with the Conham section now completed, and in operation for some years, provides for the whole of the area of the Urban Council. Mr. Alfred J. Saise, A.M.Inst.C.E., is the author of the scheme.

WATER SCHEMES IN SOUTH LINCOLNSHIRE.—The Local Government Board have notified the Sleaford Rural Council of their sanction of the Wilsford water-supply scheme, with permission to borrow 1,450*l.* The Sleaford Council have just completed a scheme for the supply of water to seven parishes in the Billinghay district at a cost of 13,500*l.* The works were designed by Mr. W. B. Marsden, C.E.

SOUTHEND SEWAGE SCHEME.—The sewage difficulties at Southend will, it is hoped, soon be settled. The Corporation has introduced a new scheme as was suggested by the House of Lords Committee which rejected the original proposals of the Corporation. This new scheme, which will cost 140,000*l.*, provides for sewers to be constructed to convey the sewage to Prittlewell, where it will be treated by a series of septic tanks, passed to contact-beds, and the effluent discharged into the sea. The scheme has been submitted to the Port Sanitary authorities interested. The Port Sanitary Committee of the Corporation of London has already approved of the scheme, subject to the control of the effluent being in their hands. The Southend Corporation will have to apply to the Local Government Board for sanction to raise a loan to carry out the necessary works, and the usual inquiry will be held.

NEW LONDON SEWAGE SCHEME.—The London County Council has under consideration a general scheme for the treatment of the London sewage on bacterial lines, and a conference on the subject will shortly be held between the Main Drainage Committee of the London County Council and the Port of London sanitary authority.

PROPOSED SHEERNESS SEWAGE SCHEME.—There is a possibility that a sewage scheme for Sheerness will be introduced. The Port Sanitary Committee has received a promise from the Admiralty to the effect that they will co-operate in every way with Sheerness as soon as a scheme for dealing with the sewage is prepared.

LONDON COUNTY COUNCIL MAIN SEWERS.—As a result of a deputation which waited upon the Main Drainage Committee of the London County Council from the Conference on Sewer Ventilation recently, that Committee has agreed to erect shafts for the ventilation of the main sewers if the local authorities obtain the necessary sites.——It was reported on Tuesday by the Public Health Committee of Greenwich that the Medical Officer had succeeded in obtaining permission for the erection of three shafts on certain terms, which will be submitted to the Spring-garden authority.

Foreign.

FRANCE.—The Town Council of Libourne have voted a million and a half francs for the erection of a civil hospital, a military hospital, and an asylum for the aged.——The jury in the second competition opened by the "Chambre Syndicale des Propriétés Immobilières" of Paris have awarded medals to the architects Sinell, Postel-Vinay, Delay, and Béquet. The subject of the competition was "The best interior distribution of dwelling-houses."——A new post-office is to be built at Vincennes.——The municipality of Rambouillet propose to open a competition for a Salle des Fêtes and a theatre.——A bridge is to be built over the Seine, at Gaillon, at a cost of 425,000 francs.——An exhibition of applied art and industry is to be opened at Tréport in June.——The municipality of Sables d'Olonne are about to spend nearly half a million francs on the enlargement of the quays.——The Rochelle railway terminus is to be improved and enlarged, at a cost of three and a half million francs.—The "Société Académique d'Architecture" of Lyons has opened a competition for a design for a restaurant pavilion at the junction of the Rhône and the Saône.——It is proposed to build a new theatre on the Place Stanislaus, at Nancy, in the place of the building now occupied by the bishop's palace. It is hoped the Commission des Monuments Historiques will prevent the scheme, which will destroy the architectural harmony and completeness of a famous square.——The Department of Public Works have devoted a sum of 1,068,000 francs to the construction of a new basin at the Port of Nice.——The portrait of Alexandre Dumas *fils*, by Detaille, has been presented to the Carnavalet Museum by his daughter, Mme. Colette Dumas.——It is proposed to organise at the Grand Palais on the Champs Elysées an exhibition of the most celebrated works which have been refused at the Salon exhibitions since 1789. The list includes the names of Corot, Millet, Delacroix, Decamps, Courbet, Barye, and Puvis de Chavannes!

GERMANY.—The Lindenburg Hospital, Cologne, which was originally a private lunatic asylum, is now being altered and enlarged so that it will become one of the most important general hospitals in the neighbourhod, with blocks for diseases of the skin, tuberculosis, scarlet fever, and diphtheria; wards for children, lunatics, and paying patients; halls for pathological anatomy, dentistry, etc. When completed the hospital will hold 1,100 beds; the additions and alterations are estimated at 5·7 million marks. The plans were prepared by Herr Kleefisch, of Cologne.

AUSTRIA.—The Institute of Plastic Art, Vienna, has founded a society for lovers of small works of art, which will enable the less well-to-do to collect small objects of art, and therewith decorate his home. The number of members is to be limited to 100; the yearly subscription of 100 kronen entitles the member to two objects of plastic art in valuable material, *i.e.*, bronze, faience, etc. These objects to be copies of some work of art produced by a member of the Institute of Plastic Art, and purchased by the Society, only 100 numbered replicas of which are to be permitted.——The President of the Kellner-Partington Cellulose Factory, Hallein, Captain Edward Partington, has presented the town with a sum of 60,000 kronen, to be used towards building a convalescent home in memory of the Emperor's sixty years' Jubilee. A condition of the gift was that the town should subscribe a like sum.——In the competition for a post-office and savings bank for Judenburg, the premium has been awarded to Herr Adolf Ruprecht, of Bruck.——For reasons that are not stated, the price of Klagenfurt bricks has been raised this spring to the high figure of 45 kronen per 1,000, and consequently this will act as a check on private building. The price of Klagenfurt dressed stone has also been raised from 4 to 5 kronen per cubic metre.

ITALY.—On January 18 the Engineer, Lorenzo d'Adda, read a paper at the College of Naval Engineering, Genoa, on his invention for armouring large battleships with ferro-concrete instead of with steel plates. An economy of about 10 million lire would thus be effected on every ship of 20,000-tons displacement. The concrete would be held in position by an inner and an outer lining of steel plates, and be reinforced with steel bolts and network. The specific gravity of steel plate is 8·100, while that of reinforced concrete varies from 2·150 to 2·400, consequently the concrete could be four times the thickness of the steel and offer greater resistance to projectiles. The work of perforating this thick layer would seriously effect the temper of the metal, which would cease to be steel any longer, and unless the projectile struck the vessel at a right angle, the result would be a furrow in the thickness of the material and not a perforation. Signor d'Adda has been authorised by the Government to conduct a series of experiments under the management of the Permanent Commission for Experiments, and he has patented his invention in all countries.——The watering place Bocca d'Arno lies 10 kilometres distant from Pisa, on the Tyrrhenian Sea. The incursions of the sea and crumbling of the coast threatened the stability of the houses built on the shore, so that in 1899 it was decided to build a dyke, the first of its kind in Italy. The embankment consists of six moles built 80 metres apart, each one being 3 metres square in cross-section, and composed of piles with a core of stones weighing from 40 to 150 kilometres each. Three piles go to the metre run, and as these have been destroyed by the *teredo navalis* in the course of five or six years, it is now proposed to reconstruct the moles with ferro-concrete.——The Court of Appeal has condemned a citizen of Verona to pay a fine because he sold a balcony formerly on his house, although this balcony was not included in the list of unsaleable works of art. The Court based its judgment on the fact that the public had, with the lapse of time, secured the right of enjoying the sight of this artistic feature, and that the removal of the same constituted an infringement of an acquired right, *i.e.*, the right to satisfy the eye with beautiful objects exposed in a public place.——The Fondaco dei Tedeschi, the ancient exchange of the German merchants in Venice, now used as the General Post-office, is threatening to fall down. The municipal authorities have issued orders for the building to be vacated at once and to be shored up. It is one of the most ancient palaces on the Grand Canal, and was rebuilt after the fire of 1505 from the designs of Girolamo Tedesco. The piles, however, were apparently not renewed, and to this fact is due the present dangerous condition. In this house Dürer painted, as a commission from the German merchants in Venice, the altar picture for St. Bartholomew's Church, known as the "Rosenkranzfest," now in the Rudolphinum, in Prague.

Miscellaneous.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Mr. Spencer W. Grant, A.R.I.B.A., is removing his offices on the 25th inst. from 63, Finsbury-pavement, E.C., to 22, Gordon-square, W.C.

TRADE UNION CONDITIONS AT HAMMERSMITH.—The Special Purposes Committee of the Hammersmith Borough Council have considered representations made by a deputation from the local branch of the Operative Bricklayers' Society, that the contractors engaged in the Great Western Railway extension works were importing cheap labour to the detriment of local workmen, and suggesting that some provision should be made before granting future concessions to the company, requiring them to observe, in the construction of works, the recognised rate of wages and hours of labour in order to give local men an opportunity of seeking employment on such work. The railway company have informed the Committee that they do not make any provision whatever in their contracts with regard to trade unions. The contractor has an absolutely free hand to select men that suit him best, provided only, so far as the company are concerned, the work is carried out to their satisfaction, and this is a principle from which the company are not likely to depart. In regard to the present

case, the company had forwarded intimation to Mr. Walkerdine, the contractor, that anything he could properly do in regard to the employment, as far as possible, of Hammersmith men, would be appreciated by the local authorities, and Mr. Walkerdine, in reply, pointed out that the majority of the men employed are local men. In the circumstances, the Committee have resolved that no further action shall be taken in the matter.

MIDLAND ASSOCIATION OF LOCAL GOVERNMENT OFFICERS.—At a meeting of the Midland Association of Local Government Officers, held on the 9th inst. at the Acorn Hotel, Birmingham, Mr H. Richardson, Surveyor to the Handsworth District Council, in his Presidential address, referred to some statements contained in the Report of the Council of the Birmingham Architectural Association in their "Green Book." In this it was stated that a matter which had occupied the attention of the Council concerned the treatment of architects, and through them of the public generally, by the surveyors and other officials of district or urban authorities. One wondered, the President continued, whether the outbursts he had referred to was not the work of those architects who had perpetrated some of the weird edifices, and "decorated" some of the best suburbs, or of those who were responsible for the unbearable monotony of the rows of shoddy dwellings which made some of the roads hideous. Was it a matter for surprise that some of the architects had come into conflict with the local authorities? It would be no compliment to be praised by such persons, but rather a tribute to one's professional integrity to be abused by them. Still, if any punishment were proposed, perhaps the cruellest would be to allow the architects to carry out some of their buildings—if possible—strictly in accordance with their own plans.

THE CEMENT CONTRACTS OF THE BELFAST HARBOUR COMMISSIONERS.—Three long questions and answers were given in the Parliamentary papers last week relative to contracts of the Belfast Harbour Commissioners. Mr. Delvin asked:—(1) Whether the firm of T. S. Dixon & Co., Ltd., are contractors to the Board, and if Sir T. J. Dixon, a director, is a member of the Board; (2) whether Mr. J. M'Connell, a member of the Belfast Harbour Trust, is chairman of W. D. Henderson & Son, and the principal shareholder, and if that firm has been a contractor for cement; and (3) whether all the cement required by Messrs. Walter Scott & Middleton, whose tender of 206,000*l.* for the construction of a new graving-dock in 1903, was supplied through the firm of W. D. Henderson & Son, and, further, that the adulterant of Kentish ragstone had been used in the cement so supplied, contrary to the terms of the specification.—Mr. Lloyd George stated, in reply, that it is true the tender of T. S. Dixon & Co. was accepted for cement and slates by the Commissioners when Sir T. Dixon was absent, but on hearing what had happened and before any orders had been given, Sir Thomas requested the Commissioners to cancel such contracts and undertook to indemnify the Commissioners against any extra cost incurred in obtaining the supplies elsewhere. The firm of W. D. Henderson & Son had not, to the knowledge of the Harbour Board, at any time been a contractor or sub-contractor for cement, and they understood that Messrs. Walter Scott & Middleton procured their cement largely from the Associated Portland Cement Manufacturers, Ltd., that each delivery of cement is accompanied with a certificate as to its quality, and that the Commissioners employ a special expert to inspect and test each delivery of cement in accordance with the requirements of the contract.

STATUE OF THE QUEEN.—A bronze statue of the Queen, sculptured by Mr. George Wade, has been set upon a granite pedestal in the grounds of the London Hospital, and will be formally unveiled in May.

THE "GREY WETHERS," WILTSHIRE.—In the scheme of purchase are included some 20 acres of Marlborough Downs, which are covered with masses of stone known as the "Grey Wethers," and, when broken, as "Sarsden" or "Sarsen stones." The National Trust make an appeal for a balance of 130*l.* which should be subscribed by March 25 in order that those unique vestiges of antiquity and of our earth's geological history may be preserved.

PEABODY DONATION FUND.—The forty-third report of the Governors for 1907 sets forth a capital expenditure on land and buildings of 1,500,279*l.* 1s. 11d. to the end of the year; the net gain for the twelve months from rents and interest has been 41,342*l.* 14s. 8d., a return of 2·69 per cent. upon the capital of the fund. On the Tottenham estate the Governors have built 154 cottages; they are now erecting sixty-four at Herne Hill. By the close of the year 12,913 rooms had been provided, contained in 5,586 separate dwellings, whereof nearly one-half consist of two-roomed tenements.

HAMPSTEAD HEATH PROTECTION SOCIETY.—The eleventh annual report of this Society, which held its annual meeting on the 7th inst., states that, in consequence of the severe lopping and disfiguring of a fine elm tree growing on the lawn at Golder's Hill, your Committee obtained from Mr. W. Goldring, of Kew, a report on the treatment of old elm trees, and also as to certain trees growing on the Heath, and copies were sent to the members of the Parks and Open Spaces Committee of the London County Cou cil, and also to the Hampstead and the St. Pancras Borough Councils. The Committee drew the attention of the London County Council to a fine oak tree, growing on the west side of the Spaniards-road, which was slowly being strangled by an iron band encircling the trunk, and are pleased to state that the iron band has been removed and replaced by one of larger diameter at a higher point on the trunk. The Committee, having learned early in October that the London County Council had granted to the Hampstead Scientific Society the privilege of removing their observatory shed from the enclosure on the east side of the Hampstead bathing-pond to the enclosure round the flagstaff close to the Whitestone pond, drew the attention of the Council to the Hampstead Heath Act, 1871, especially to clauses 12, 13, and 40, which decisively forbid the erection on this public land of any building or structure for any purpose which does not promote the use of this land by the public as an open space; and the Hampstead Scientific Society have decided to abandon the scheme so far as Hampstead Heath is concerned, and to re-erect the observatory on private ground. The report records that the 80 acres of meadow land purchased from the Eton College estate have been thrown open for the public; and that Miss E. Field, member of the Committee, has presented to the public a Portland stone drinking fountain, which has been erected in these fields near the Wyldes Farm. The Hon. Secretary of the Society is Mr. A. Heath, 26, Brookfield, West-hill, Highgate, N.

BUILDERS AND LONDON FIRES.—The report of the Chief Officer of the London Fire Brigade, issued a few days ago, shows that the number of fires occurring on builders' premises during 1907 was 32. The causes were as follows:—Boiling-over tar, 1; candle, 1; friction of machinery, 1; hot ashes, 2; light thrown down, 10; light thrown from street, 1; lime slaking, 1; mineral-oil lamp, 1; mineral-oil lamp exploding, 1; overheat of gas-engine, 1; spark from fire, 4; unknown, 8. Twenty-eight fires occurred at buildings under repair or in course of erection, as compared with 43 in 1906. They were caused as follows:—Boiling-over tar, 1; defective electric circuit, 1; defect in flue, 1; gasfitters at work, 1; hot ashes, 6; light thrown down, 8; light thrown from street, 1; lime slaking, 2; overheat of flue, 1; spark from fire, 4; timber under hearth, 1; unknown, 1. Fires at contractors' premises numbered 23, and one was serious. The causes were:—Boiling-over tar, 1; children playing with matches, 1; gas-stove, 1; hot ashes, 1; light thrown down, 9; mineral-oil lamp, 1; overheat of boiler, 1; spark from fire, 1; spark from forge flue, 1; spark from locomotive, 2; spark from watchman's fire, 1; unknown, 2; vapour of spirit coming into contact with gas 1. The total number of fires in London during the year was 3,320, and of these 975 occurred in private houses. As regards trades, licensed houses and hotels head the list in number of fires with 84 (25 of which are hotel fires), cabinet-makers come next with 47, and other trades in the following order:—Tailors, 42; confectioners, 42; drapers, 38; refreshment-houses, 37; fried-fish shops, 35; and boot and shoe stores, 31.

PROPOSED MOTOR-ROAD TO WINDSOR.—In view of the non-compliance by the promoters with the standing orders, the Standing Orders Committee of the House of Lords, presided over by Lord Onslow, have decided that the orders cannot be dispensed with in this instance; the Bill consequently must, for the present, be relinquished. The project related to the contemplated construction of a road for motor and car traffic from Hammersmith Broadway and Goldhawk-road to Windsor along a route 60 ft. wide, at a computed cost of 1,400,000*l.*

MANCHESTER BUILDING BY-LAWS.—The Manchester City Council will be asked shortly, probably at the next meeting, to give their sanction to the new building by-laws which the Improvement Committee have prepared and adopted. The Committee have been at work upon the new laws for nearly three years. The Local Government Board have approved the new by-laws, and all that is now needed is the formal sanction, first, of the Withington Committee, and then of the City Council. The new laws mark, in the judgment of the Committee, an important and much-needed step forward, in that they will secure to the houses of the future more air space, wider streets, and an absence of long, monotonous rows. The object, of course, is to stop the spread of slumdom, and promote the health and comfort of the people. There has been quite a rush of late to get plans passed on the old scale. The new by-laws will not affect the houses that have been sanctioned, but all plans that come before the Committee for sanction will have to conform to the new regulations. In future no new street will be less than 14 yds. wide, an increase of 2 yds. on the minimum width. Main roads must be 50 ft. wide instead of 36 ft., the present minimum. And as far as possible one street will be laid so as to fit in with other streets. Long rows of houses all of one pattern will, it is hoped, be a thing of the past. No block of houses must contain more than ten, nor cover a frontage of more than 100 yds. And at the back of each cottage there must be an area of not less than 250 ft.—an advance of 100 ft. No blind alleys will be allowed in future. All passages must lead to main streets. Another important provision is that staircases must be fitted with handrails. If the Committee had had their way they would have stipulated fireguards. The Local Government Board, however, ruled that as fireguards were not fixtures the subject could not be dealt with in building by-laws.—*Manchester Guardian.*

THE EMBANKMENT AND ALDWYCH TUNNEL.—Such progress has been made in the construction of this subway, which will connect the London County Council's tramway systems on both sides of the river, that it will be completed by the end of this month and thus be ready for the heavy "cross-country" traffic of the Easter holidays. The tunnel, which was begun in March of last year, covers a distance of 600 ft. from the Embankment to the Aldwych station, and runs to a depth of 33 ft. below Wellington-street. For 380 ft. from the Embankment the track had to cut across the supports of the viaduct that forms part of Wellington-street, and it was in the replacing of them by girders, for which 500 to 600 tons of steel and iron were used, that the most difficult part of the work lay. For the remaining distance to Aldwych the track branches into two separate tunnels, which were dug out of the clay and ballast by ordinary boring apparatus. The work has employed on and off about 100 men daily, and, excluding the laying of the rails, is estimated to cost from 60,000*l.* to 65,000*l.*—*Morning Post.*

GENERATING-STATION, STEPNEY.—At the last sitting of the Stepney Borough Council it was reported that plans had been prepared by the Borough Engineer for the erection of station buildings at Blyth's Wharf, and had been forwarded to the London County Council for approval.

MUNICIPAL OFFICES, HOLBORN.—The Finance Committee of the Holborn Borough Council reported on Wednesday they had had an estimate before them showing that the total expenditure to be incurred in connexion with the purchase of property and the construction and furnishing of the new municipal offices to be 54,233*l.* Against this 6,052*l.* was to be set for land sold not required, and 20,000*l.* had been borrowed, leaving 28,181*l.* to be provided. They considered that a suitable opportunity now occurred for the borrowing of a further 10,000*l.* from the London County Council, to be applied towards the cost of acquiring the site upon which the Council's new municipal buildings are being erected.

MONTAGUE-PLACE IMPROVEMENTS.—A letter from the Duke of Bedford was considered at the last Holborn Borough Council meeting to the effect that he was unable to obtain possession of Nos. 12, Keppel-street, 4, Torrington-street, and 70 and 71, Torrington-square, required for the construction of a new street from Torrington-square to Montague-place, and it was decided to put in force the Council's compulsory powers under the Metropolitan Paving Act, 1817.

CAMBERWELL COUNCIL.—At the last meeting of the Camberwell Borough Council, on Wednesday last week, the matters of grants in support of the schemes for securing a park at Norwood and an addition to Ruskin Park were postponed. It does not seem likely that the Council will vote anything towards the acquisitions.——Agreement was expressed with the District Surveyors' Association that any amendments of the London Building Acts should be contained in a Bill under the title of the London Buildings Acts, and not, as proposed by the County Council, in a General Powers Bill.——In connexion with the Council's housing estate it was decided that instead of adopting a sliding scale of rents that the system of giving bonuses should be extended to the tenants.——The Local Government Board notified that they had no power to hold an inquiry, as desired by the Council, with reference to the purchase of properties in Addington-square and of certain forecourts in Rye-lane.

SMOKE LAWS TO BE AMENDED.—The London County Council are circularising the borough councils, pointing out that the Public Control

Committee have under consideration the question of obtaining an amendment of the law with a view of dealing more effectively with nuisance from smoke. It would appear desirable, it is urged, that the Council and the several local authorities should have more extensive powers for enabling them to deal with the evils arising from smoke, and a draft scheme for the amendment of the existing law has been prepared for consideration. Before recommending the Council to seek legislation, the Public Control Committee desires to be furnished with any observations which the borough councils wish to make.

PROPOSED STREATHAM CONVENIENCE.—The Local Government Board has intimated its intention to hold an inquiry into the proposal of the Wandsworth Council to construct a sanitary convenience at Christchurch-road, Streatham.

WANDSWORTH INFIRMARY SANCTIONED.—The Local Government Board has expressed approval of the proposals of the Wandsworth Guardians for the erection of a new infirmary at St. James's-road, and informed the Wandsworth Borough Council that there would be no advantage in holding an inquiry, as suggested by the Council.

LONDON BUILDING ACTS.—The Camberwell Borough Council have decided to inform the President of the District Surveyors' Association that they agree with the Association that any amendments of the London Building Acts should be contained in a Bill under the title of the London Building Acts, 1894-1905 (Amendment) Act, 1908, and should not be contained in a General Powers Bill.

PAVING IN BATTERSEA.—On Wednesday last week the Battersea Borough Council resolved to relay the footpaths in the following streets with artificial stone:—Amies-street, Este-road, Falcon-terrace, Landseer-street, Speke-road, Trott-street, and Usk-road. The estimated cost is 2,052*l*. 17s. 6d.

THE RIVER WANDLE AND A BUILDING SCHEME.—The Highways Committee of the Wandsworth Council report having further considered a proposal for filling in the old course of the River Wandle, an exchange of land with the Wandsworth Gas Company and Mr. Pike, and the formation of a new approach to the Southfields slop-shoot, in connexion with the development for building purposes of the Gas Company's estate in Merton-road, Southfields. Since the scheme approved by the Council last July was settled, the Gas Company have raised the question of drainage all through the estate into the Council's private drain across the slop-shoot. The Committee have been unable to come to a satisfactory arrangement with the Gas Company in this matter, and the Gas Company now state that, unless the Council can agree to give the Company access to the deep sewer with which the private drain is connected, they must decline to consider further the exchange of land. The Committee do not see their way to recommend the Council to agree to this, and have informed the Company that, in view of their letter, the scheme must be considered at an end. One of the conditions upon which the London County Council sanctioned the formation of streets upon the estate was that a proper concrete wall should be constructed to the satisfaction of the Wandsworth Council for the whole boundary of the estate next to the backwater of the Wandle. The question of the construction of the wall has been in abeyance pending the settlement of the arrangements for filling in the old course of the river, which would have rendered the wall unnecessary. The County Council has extended the time within which the work is to be completed to June 14. As the scheme for filling has now been dropped, the Committee have asked the Company to proceed with the construction of the river wall in accordance with the London County Council sanction.

RETAINING-WALL PROBLEM.—Reporting to the Wandsworth Council, the Highways Committee say that they have further considered the subject of the construction of a retaining wall in Rectory-lane, Tooting, in connexion with the development of the Furzedown Park estate for building purposes. A letter had been received from the solicitor of the London County Council relative to the requirement of the Wandsworth Council that a substantial fence should be fixed on the top of the wall, or that the wall should be raised several feet, and forwarding a copy of a letter from Mr. Millar's solicitors stating that he (Mr. Millar) was executing the work to the entire satisfaction of the Borough Council, that he did not see his way to do anything further, that he had disposed of nearly all of the properties fronting on the retaining wall, and suggesting that the Borough Council should now take over the roadway and footway and erect anything that it might think advisable in the way of a wall or fence to protect the pathway, and assess the cost upon the frontagers in the ordinary way. The London County Council asked for the observations of the Borough Council upon this letter. The Committee of the Borough Council say that the London County Council sanctioned the roads on the estate on the condition that the owners of the estate should erect a retaining wall where necessary along Rectory-lane to the satisfaction of the Borough Council, the reason given for this condition being that proper protection might be provided to prevent the higher land falling into the roadway of Rectory-lane. Having regard to all the circumstances, the Committee have come to the conclusion that there was no alternative but for the Council to waive its requirement, although the Committee still believe that some provision for the proper protection of the public is necessary. The cost of providing the proposed railing could not be charged as part of the expense of making up the road as a new street. The Committee promise to report later in reference to the provision of the proposed railing.

WORCESTERSHIRE WAR MEMORIAL.—The statue of the Worcestershire South African War memorial, which is being executed by Mr. Colton, is now nearly completed. The memorial represents a kneeling soldier, with fixed bayonet, while above is the figure of Immortality, holding a crown in one hand and a palm branch in the other. A site has been selected in the Cathedral grounds, and the total cost will be about 1,600*l*.

ASSOCIATION OF MANAGERS OF SEWAGE DISPOSAL WORKS.—A district meeting of this Association was held at Leeds on the 14th inst. Mr. James H. Kershaw, F.C.S., of Rotherham, was in the chair. Mr. W. Tomlinson, manager of the sewage works of the Chesterfield Corporation, read a paper on "The Cheap Construction of Filters." Among other things, he mentioned that it was found in the north and midland counties that the clay subsoil would answer for a floor as well as concrete, and that the ordinary stoneware agricultural duct or tile would act as well as patent tiles for the drainage. He held from experience that it was unnecessary to provide floors of concrete when clay was firm. In reference to the filtering medium, coal, coke, coke breeze, broken slag, sandstone, pottery, saggars, and clinker from destructor works were more or less satisfactory. His experience at Chesterfield, where there was a destructor on the farm, had led him to pin his faith upon the clinker from the destructor. It withstood the action of the weather and sewage, and was not costly to produce if made in the neighbourhood. Last year 14,700 tons of refuse went through the four-cell destructor. The total cost of destroying the refuse, screening, and deposit in filter was 2s. 11d. per cubic yard of filter medium, while the total cost of making a filter 100 ft. diameter and 8 ft. in depth was 340*l*. Ready for use, the filter cost 426*l*. There was still a very large margin between these figures and those of filters made in other towns. A discussion followed the reading of the paper.

DRINKING FOUNTAIN, GLASGOW.—A drinking fountain, presented to the City of Glasgow by Mr. William Annan, has just been erected at the junction of Castle-street and Stirling-road. It was designed by Mr. Frank Burnet, and executed by Messrs. Scott & Rae, Glasgow.

LONDON COUNTY COUNCIL TRADE SCHOLARSHIPS.—The London County Council has recently established trade scholarships, with the object of giving boys about the age of 13 or 14 opportunities of going through courses of technical instruction at polytechnics and technical institutes with a view to qualifying themselves for some skilled occupation. Boys who desire to become engineers may compete for scholarships at the technical institutes at Paddington and Poplar, and at the Borough Polytechnic. Boys who wish to enter the building trades may compete for the scholarships at the Council's Building Trade School at Brixton, or the new Beaufoy Institute at Kennington. Boys who prefer the woodwork industries may try for the scholarships at the Shoreditch Technical Institute, or at the School of Art Wood-carving. Other trades are also provided for at the Central School of Arts and Crafts, where boys can learn silversmithing, and at the Borough Polytechnic, where instruction is given in the printing trades, leather trades, and other industries. The above scholarships carry with them free instruction at the technical school, together with maintenance grants of 10*l*. for the first year, and 15*l*. for the second or succeeding years. They are confined to boys who reside within the area of the County of London. Further information can be obtained from the Executive Officer, London County Council Education Department, Victoria-embankment, W.C.

ARTIFICIAL MARBLE.—The "Manu-Marble" Company (Gloucester and London) send us some specimens of their material, which is to produce the effect of marble, for wall-lining and such decorative purposes, at one-third the cost. Some of the imitations, those of the *griotte* type of marble especially, are exceedingly well done, and it would be difficult to detect that they are not actual marble. The slabs or tiles are roughened at the back to afford a key. Of course we have no sympathy with imitation representations of more costly materials; but for those who care to use them the "manu-marble" productions are very good of their kind; superior in surface and effect to some of the other imitations once so much in fashion, and very likely more durable; but of its composition we have naturally no information.

DRAINAGE WORKS IN BERMONDSEY.—The Borough Council of Bermondsey, at its sitting on Tuesday, approved of the following plans for drainage:—By Mr. H. H. Hollingsworth on behalf of the trustees of St. George's Hall, 103-109, Old Kent-road; from Messrs. Field, Sons, & Glasier, for 138, Bermondsey-street; from Messrs. Sabey & Son, Ltd., for the drainage of a site next the Dundee Arms, Tower Bridge-road.

TANGYE MEMORIAL, BIRMINGHAM.—The Tangye Memorial, which, when completed, is to be placed in the entrance-hall of the Birmingham Art Gallery, will consist of a large bronze plaque, with medallion portraits of Sir Richard and Mr. George Tangye, mounted on a slab of green marble. The commission has been entrusted to Mr. W. R. Colton, A.R.A.

BRIGHTON MASTER BUILDERS' ASSOCIATION.—The fifteenth annual dinner of this Association was held at the Hôtel Métropole on Tuesday. The President, Alderman Botting, J.P., was in the chair, and there were about ninety members and visitors present. After the loyal toasts had been honoured, Mr. G. F. Donne gave "The Corporations of Brighton and Hove." Alderman Gervis, replying, said that every town gets the Corporation it deserves. If the people of a town realised the importance and the usefulness of municipal work, and all classes tok an interest in the election, they would ensure getting the best men to represent them. "The Association of Master Builders" was given by Mr. E. E. Humphrys, who claimed that, formed some fifteen years ago, the Association had thoroughly justified its existence and had been the means of preventing from taking place in Brighton unfortunate strikes such as had occurred in other towns. In addition the master builders had established an insurance company among themselves that had been wonderfully successful. So long as the affairs of the Association were so excellently managed as at present, he was satisfied it would have power to control the trade in Brighton. The Chairman, in responding, spoke of the Association as being in a very healthy state. They were at peace with their workmen and, he believed, with everyone else; but while their Association was flourishing, he was bound to say that trade was not too brisk. There might be a slight improvement compared with last year, but he was not prepared to say it was very appreciable. During forty years' experience he had seen only two such periods of depression. The cause was undoubtedly that, consequent on the cost of the last war, 250 millions of money was locked up that would otherwise have been distributed and reached all trades. "The Visitors," proposed by Alderman Wilson, was responded to by Councillor Godfree, who also submitted the last toast, "The Chairman." In returning thanks, Alderman Botting said they were holding a record gathering that night, a proof in itself of the growth of the Association.

POLICE BUILDINGS, STOCKTON.—Sir H. Kimber's Select Committee of the House of Commons has passed the preamble of the Stockton Corporation Bill which authorises the expenditure of 30,000*l*. on new and additional police buildings and purchase of land therefor.

WELL-SINKING TENDERS.—At the Southwark Council on Wednesday tenders were received for well-sinking and pumping plant at the baths at Manor-place. The highest tender for well-sinking was 1,238*l*., submitted by Messrs. T. Tilley & Sons, the lowest being 554*l*., sent in by Mr. Joseph Pennington, of Chiswick. The Committee commented upon the great difference in the tenders, but recommended the acceptance of the lowest, subject to satisfactory inquiries. For pumping plant the tender of Messrs. Lee, Howl, & Co. (632*l*.) was accepted. The highest tender was submitted by Messrs. G. R. Mather & Son—namely, 964*l*.

HOUSE AND BUNGALOW EXHIBITION, AINSDALE.—A "Seaside House and Bungalow Exhibition" is to be held at Ainsdale, near Southport, from August to October in this year. Ainsdale is a flat district near the sea, which, as we remember it a good many years ago, was little more than waste land and sandhills, though we presume all that is altered long since. The prospectus states that applications are repeatedly made to the Ince Blundell Estate for permission to erect temporary summer camping-places on this coast, and the estate find themselves unable to grant these requests. The intention of the promoters, therefore, is to supply a want by enabling

families of moderate means to enjoy the advantages of a small summer residence on one of the healthiest portions of the Lancashire coast. Plots will be leased to persons not wishing to compete in any of the classes hereinafter mentioned, and in the general interest, and to avoid indiscriminate disposal of houses in unsuitable positions, the company reserve the right to allocate the plots to the various exhibitors. They also reserve the right to abandon the exhibition if sufficient plots are not taken up to ensure success, and intending exhibitors will be notified before any plots are agreed to be leased if this should take place. No allotments will be made until a rough sketch and plan, with a description of the material intended to be used, have been submitted and approved, and in making such allocations the company will, as far as possible, comply with any expressed wishes of exhibitors, who may, if they desire, enter more than one exhibit in each class. The company may, if they think fit, permit two plots or more to be taken for the erection of one house. The site of the exhibition is within the Urban District Council of Birkdale, three miles from Southport, and fifteen miles from Liverpool, on the coast. The development of Ainsdale, as a whole, is in the hands of the Ince Blundell Estate, who are owners of the whole of Ainsdale. An extensive scheme for the laying out has been prepared by Mr. Frederick G. Fraser, architect and surveyor, Liverpool, which is already in hand, and the sites are being rapidly disposed of.

DISCOVERY OF A ROMAN INCISED STONE IN DORSETSHIRE.—At a meeting of the Dorset Field Club recently the Rev. R. G. Barttelot, Vicar of Fordington St. George, produced photographs of what he described as "*par excellence* the Fordington Stone"—a large slab of Purbeck marble, 2 ft. 11 in. by 2 ft. 4½ in., and 6 in. thick. It was discovered on February 5, face downward, beneath St. George's Church, where it formed the foundation-stone of the south-east corner of the porch, having evidently been laid there in Norman days. The partially-effaced inscription might read when restored as follows:—

C(AIO) ARI(STO)
CIVI. (R)OM.
AN(NIS) L
RVFINVS ET
(CH)ARINA ET
AVIIA FILI EIVS
E(T) (R)OMANA VXO(R).

This, Mr. Barttelot said, might possibly be translated:—"To Caius Aristus, a Roman citizen, aged 50 years, Rufinus and Charina and Avea, his children, and Romana, his wife (or his Roman wife) (set up this stone)." His (Mr. Barttelot's) impression was that when the Norman builders of St. George's Church put in the tympanum or lintel they found some old Roman stones; and when they found that the tympanum needed the protection of a porch they simply used this Roman slab as a foundation-stone, turning it face downward. Unfortunately it was broken right across the middle by the weight of the porch. A *papier mâché* cast of the stone has been sent up to the British Museum, and the opinion of the experts was being awaited with interest. The stone itself was at present in the vicarage. The Bishop of Salisbury, who was known to be an eminent Latinist, had expressed the opinion that it belonged to the IInd century. It was the first incised stone that had been found in Dorsetshire.

STANDARD MEASURE OF TIMBER.—The standard measure used in Great Britain is the St. Petersburg standard, and a St. Petersburg standard deal contains 6 ft. of 11 in. by 3 in. There are 120 standard deals in one standard, so that there are 720 ft. of 11 in. by 3 in. in a St. Petersburg standard, twice that amount, viz., 1,440 ft. in a standard of 5½ in. by 3 in., and half that amount, viz., 360 ft. in a standard of 11 in. by 6 in. The standard is, for calculating purposes, divided into quarters and deals, there being 4 quarters in one standard, 30 deals in one quarter, and 6 ft. in one deal. These figures, 6, 30, and 4, must therefore be used as divisors after the timber has been brought to the standard size of 11 in. by 3 in., and it must be noted that all timber must be reduced to this standard size before it can be thus dealt with.—*Greenwood's "Timber and Stone Calculator."*

OPEN SPACES AND PUBLIC PARKS.—The Acton District Council have opened negotiations to purchase 12 acres in Southfield-road, Acton Green, at a cost of 14,000*l.*, for purposes of a recreation-ground, and, with the sanction of the Local Government Board, will proceed to borrow 2,500*l.* in view of the purchase hereafter of a playing-field at North Acton, where all available land is being rapidly taken for building.——The Charity Commissioners have formulated a scheme in respect of the munificent legacy left on behalf of public and charitable objects in Merton, Surrey, by the late Mr. John Innes, who has bequeathed also his residence, Manor Farm, with 11 acres, upon which a public park and school of horticulture will be established.——The Camberwell Borough Council are about to acquire Brunswick Park as a public open space, with the aid of a contribution of 423*l.* by the London County Council.——A similar park has just been opened at Shooter's Hill, consisting of "Eaglesfield," a tract of 9 acres on the crest of the hill, and lying 420 ft. above the sea level, which the Woolwich Borough Council acquired at a price of 4,541*l.*, with about 900*l.* for levelling and planting and conversion of pits into two ornamental lakes.——The Metropolitan Public Gardens Association will take steps to acquire and lay out disused burial-grounds in Coxson's-place, Bermondsey, and East India Dock-road, Poplar; and have received communications from the London County and Chiswick District Councils agreeing to oppose the London and Windsor Motor-road Bill with a view to safeguard Stamford Brook and Back commons, and Ravenscourt Park, Hammersmith. As a tribute to the beneficent labours of the Association and its founder and chairman during the past twenty-six years, the Gardeners' Company will confer their honorary freedom upon Lord Meath in the course of the current month.

CIVIL SERVICE ESTIMATES, 1908-9.—The estimates for Classes I.-IV. of the Civil Services for the official year ending March 31, 1909, show that the total sum asked for is 27,608,649*l.*, being a net increase of 227,122*l.* The item for public works and buildings (Class I.) is 3,029,468*l.*—a net increase of 160,636*l.*, including 86,000*l.* in respect of Revenue buildings, and 59,900*l.* for public buildings in Great Britain. Education, Science, and Art (Class IV.) takes 17,578,230*l.*—a net decrease of 128,007*l.*, which comprises a decline of 60,000*l.* in special grants for buildings, though there is an increase of 45,000*l.* for technical institutions, schools of art, and evening schools.

Law Reports.

ARCHITECTS' ACTION FOR FEES.

IN the King's Bench Division on the 13th inst. the hearing was concluded, before Mr. Justice Lawrance and a special jury, of the case of Emden, Egan, & Co. *v.* the Wilkinson Sword Company, Ltd.—an action brought by the plaintiffs, a firm of architects carrying on business in Lancaster-place, Strand, to recover from the defendant company, of No. 27, Pall-mall, 900*l.*, fees for work and labour done and moneys expended at the defendants' request.

The plaintiffs' case was that, during the autumn of 1906 and the spring of 1907, they were engaged by the defendants to prepare plans, etc., for the building by the defendants of certain flats, a motor-garage, restaurant, gymnasium, Turkish baths, and other buildings on a site at Chelsea which belonged to the defendants. Plaintiffs alleged that such work was done on behalf of the defendants upon instructions given by Mr. Hermann Kirschbaum, partly verbal and partly in writing, whereby it was agreed between the parties that in the event of the scheme being abandoned by the defendants or not carried out under the superintendence of the plaintiffs as architects, the defendants should pay to plaintiffs as remuneration for the work a fee at the rate of 1½ per cent. on the estimated cost of carrying out the scheme, such fee to cover all payments made by the plaintiffs. The estimated cost of the work was the sum of 60,000*l.* Defendants abandoned the scheme, and, omitting to pay the plaintiffs their fees according to the alleged agreement, the present action was brought. In support of their case the plaintiffs relied upon two letters written by the defendants to them dated February 9 and March 4, 1907, and on a letter from them to the defendants dated February 12, 1907, and a document dated March 6, 1907, and handed on that date by the plaintiffs to Mr. H. Kirschbaum, as director of the defendant company. Alternatively the plaintiffs claimed 900*l.*, or reasonable remuneration, for the work and labour done and moneys expended on the defendants' behalf.

The defendants denied that they had ever agreed with the plaintiffs that, in the event of the scheme being abandoned or not carried out under the superintendence of the plaintiffs, they should pay to the plaintiffs 1½ per cent. on the estimated cost of carrying out the scheme. Defendants admitted that they employed the plaintiffs to do certain work for them, and said that they had always been ready and willing to pay the plaintiffs' charges in respect thereof. Defendants admitted that they were liable to pay to the plaintiffs 147*l.* 2s., which sum they paid to the plaintiffs pursuant to the order of Master Archibald dated September 16, 1907.

Mr. Lush, K.C., and Mr. Edward F. Spence appeared for the plaintiffs, and Mr. Arthur Powell, K.C., and Mr. Abinger for the defendant company.

Mr. Lush having opened the plaintiffs' case, Mr. W. S. Emden, a member of the plaintiff firm, was called.

In cross-examination by Mr. Powell, the witness said he was introduced to the defendants by a Mr. Barnard, a house and estate agent. Witness had been in the profession for eleven years, which included the term of his articles for three years. At the time he saw Mr. Barnard he did not know that the defendants had some time previously removed their works from Chelsea to Acton. He understood from Mr. Barnard that defendants wished to utilise their land at Chelsea. He knew that the defendants were a limited company. He was never told by Mr. Kirschbaum that the erection of the flats would all depend upon the company being able to get further capital. It was not unusual for architects to reduce their scale of fees as they had done in the present case. They agreed to reduce their fees to 3 per cent on the estimated cost of the flats because defendants had 12 acres which was to be developed at Acton, and his firm thought they were going to be the architects for that. He prepared three distinct elevations for the larger scheme. The preparation of the specification was included in the architects' percentage. He prepared about three-quarters of the material to write the specification from. He never wrote the specification down on paper. It was not the fact that when he undertook the work he thought it was all a scheme in the air. He claimed to be entitled to 900*l.* from the defendants. His suggestion was that an architect was entitled to half his full commission when he had prepared the plans.

Re-examined: He considered that they were entitled to at least 900*l.* from the defendants.

Mr. S. H. Egan, a member of the plaintiff firm, also gave evidence in support of the case.

Mr. William Woodward, an architect and surveyor, examined, said he considered the plaintiffs' charges reasonable. He said the custom of the profession was that the 2½ per cent. commission included the writing of the specification, but a full specification was frequently now not written out until the tender was accepted; but in order to give the quantity surveyor sufficient information to take out his quantities the architect prepared an outline or abstract specification, as it was called, which was handed to the quantity surveyor, and when the tender was accepted a full, fair specification was written out and handed to the contractor. The plaintiffs' charges were reasonable, and their work was extremely well done.

At the close of the plaintiffs' case Mr. Powell proceeded to open the defence. He said that the matter came about in this way. Defendants' works had to be removed from Chelsea to Acton, and part of the site had been disposed of. One of the directors thought the remainder might be turned to better account. Mr. Barnard introduced Mr. Emden to Mr. Kirschbaum. It was thought that the erection of a block of flats on the Chelsea site would be very advantageous. Mr. Barnard was told that the scheme might come to something or might come to nothing, and that must have been communicated to the plaintiffs. All these things were in the air, and never got any further than in the air. It never got any further than plans. The jury would hear from the evidence that 900*l.* was beyond all question a most exorbitant sum for the plaintiff to claim, and he submitted that they were only entitled to reasonable remuneration for the work they had done. There was no suggestion in the correspondence that Mr. Kirschbaum had agreed to the memorandum, or that he had ever had it. He (counsel) therefore asked the jury to say that the agreement the plaintiffs put forward was not the one to which the defendants agreed, and that they had never contracted to pay that large sum. Plaintiffs alleged that they were entitled to 1½ per cent. on the 60,000*l.* because that was the custom according to the rules of the profession. But one body could not say, "We are going to have a set of rules, and we will make everybody conform to them." But, even supposing that the rules of the R.I.B.A. did bind the defendants, the sum which the plaintiffs claimed was only to be paid if the work was carried out. Plaintiffs could not bring themselves within the rule because they had not done everything that had to be done by them. Plaintiffs had referred over and over again to the "scheme" in their letters, and it never got beyond a scheme. He submitted that 200 guineas would, in the circumstances of the

case, be ample remuneration for the work the plaintiffs had done.

Mr. Hermann Kirschbaum, examined, said he was one of the directors of the defendant Company. When the Company removed their factory from Chelsea to Acton, the land at Chelsea remained on the Company's hands. Mr. Barnard, a house and estate agent, introduced him to the plaintiffs. No definite scheme was ever put forward as to the land at Chelsea. He saw Mr. Emden in the October as to developing the land by the erection of a garage and flats. He explained the idea to Mr. Emden, and Mr. Emden got out the first set of sketch-plans. Witness never told Mr. Emden it was a definite matter. He had a conversation with Mr. Emden as to the price he was to charge for the plans, and the figures mentioned were 30*l.* and 50*l.* The proposed scheme never came to anything definite. There was the original rough sketch, then the addition of a Turkish bath and gymnasium, and then the larger scheme. None of those schemes were put formally before the board; they were discussed informally, however, but no decision was ever come to upon them. Ultimately everything fell through. He had never seen the memorandum referred to by the plaintiffs. He had never said that he agreed to it. He had no idea that the plaintiffs were going to charge them the 1½ per cent. scale if the matter did not go through, and he never agreed to pay plaintiffs on that scale. He never had it in his mind to pay any percentage at all if the matter did not go through. If it did not go through the ordinary charges had to be paid. From first to last it was nothing more than a scheme.

Cross-examined by Mr. Lush: He became a shareholder in the Company in 1899. He and his relations held the greater number of the shares in the Company. The Company had intended to build a block of flats at Chelsea if it could be financially arranged. He admitted they owed the plaintiffs something for the plans they had prepared. He should say, at a guess, a fair price to be paid to the plaintiffs for the work they had done would be about 150*l.* to 200*l.*

Do you think you owe them anything for the plans?—I should think about 150*l.*

Mr. Lush: About 1*l.* per plan.

Cross-examination continued: Defendants had never offered plaintiffs 750*l.* for the plans they had prepared in order to settle the matter amicably. The sum they had offered was 500*l.* He did not, however, admit that that sum was due to the plaintiffs.

Mr. G. F. Rouser, examined, said he was the secretary of the defendant Company. He had been present at many of the interviews between Mr. Emden and Mr. Kirschbaum, and had never heard Mr. Emden suggest that he was, in the event of the scheme falling through, to be remunerated at the rate of 1½ per cent. commission. He was present at the interview in July when they tried to settle the matter amicably. He thought that the defendants then offered 500*l.* to settle the matter out of Court.

Mr. Tolhurst Musgrave, examined, said he was a director of the defendant Company. He had never heard it suggested that the Company were to pay plaintiffs for the plans a commission on the estimated cost of the buildings. The offer the Company made to the plaintiffs to bring about an amicable settlement was 500*l.* in full settlement of everything.

Mr. G. F. Sharp, examined, said he was an architect and surveyor practising at No. 57, Chancery-lane. He was well acquainted with the charges made in his profession. He had attended and inspected the plaintiffs' drawings. It was known that firms of architects undertook what might be called speculative work. Assuming that the work the plaintiffs had done was speculative, he considered that about 250 guineas would be a fair charge for all the work they had done. He thought that that sum would amply remunerate the architects for the work they had done. The specification was an important part of the architect's work. There was no custom by which you could charge the half-commission scale, and then deduct the cost of the specification. No commission could be charged unless the matter went as far as and included the specification. The drawings had to be paid for according to the trouble involved and the time expended upon them.

Cross-examined by Mr. Spence: He had done speculative work. He had prepared drawings where it was doubtful whether the work would go on. His contention was that to entitle the architects to the half-fee it would be necessary for them to prepare the specification and to prepare a considerable number of detailed drawings. Plaintiffs' drawings were not sufficiently complete to be handed over to the quantity surveyor.

What drawings?—The detailed drawings, as to some parts of the buildings. I doubt whether the quantity surveyor could take out the quantities from those drawings.

Cross-examination continued: He was employed by the defendant Company before the plaintiffs came on the scene.

You were supplanted?—Yes.

Did you make drawings for this particular piece of land?—Yes.

Does not that fact cause you to take rather a pessimistic view?—No; I am sorry you suggest it.

Cross-examination continued: Defendants had always treated him very fairly. The detailed drawings he had referred to were necessary to enable the quantity surveyor to get out the quantities. Plaintiffs' plans were complete in every other respect.

In the result, the jury returned a verdict for the plaintiffs for 700*l.*, and judgment was entered accordingly.

APPEAL BY A CONTRACTOR.

THE case of the Croydon Rural District Council *v.* Sutton District Waterworks Company (Ewart third party) came before the Court of Appeal, consisting of the Lord Chief Justice and Lords Justices Farwell and Kennedy, on the 17th inst., on the appeal of Mr. Ewart, the third party, from a judgment of a Divisional Court of King's Bench, composed of Justices Phillimore and Walton, reversing a decision of the learned County Court judge sitting at Croydon. (The case was reported in the *Builder* of October 19 last.)

The question for decision was whether or not the Water Company was entitled to an indemnity from the appellant, a contractor, who had contracted to construct a reservoir and accessories for the Company, in respect of liability for extraordinary traffic which the Company had incurred through the acts of the contractor. The District Council said that the Water Company was liable, and the latter brought in the appellant, the contractor, as third party. Fifty pounds was ultimately paid into court, and it was agreed that if the Water Company was entitled to an indemnity the appellant was to pay 37*l.* 10s. The original claim was 170*l.*, and the District Council accepted 50*l.* The site for the reservoir was at Hoe Green, and the contractor employed three parties to deliver the necessary material, and in the haulage of these materials to the site the alleged damage was caused. The Divisional Court held that the Water Company had a remedy over against the third party. Hence the present appeal of the third party.

In the result, the judgment of the Divisional Court was affirmed, and the appeal dismissed with costs.

LIABILITY OF TRAMWAY COMPANY TO REPAIR ROADS.

THE case of *In re* an arbitration between the Norwich Corporation and the Norwich Electric Tramways Company, Ltd., came before the Court of Appeal, consisting of the Lord Chief Justice and Lords Justices Farwell and Kennedy, on the 13th inst., on the appeal of the Tramways Company from a judgment of Mr. Justice Bray in the King's Bench Division in favour of the Corporation.

Mr. C. A. Russell, K.C., Mr. Danckwerts, K.C., and Mr. Boydell Houghton appeared for the appellants, and Mr. Macmorran, K.C., and Mr. E. E. Wild for the respondent Corporation.

Mr. Russell said that the appeal was brought for the purpose of determining the rights of the parties, who disagreed as to the extent of their liabilities as to the repair of the streets through which the Company's tramways passed. The question first came before Mr. Justice Phillimore, who decided the case in favour of the Corporation; but the Company then raised the point that the General Tramway Acts provided for the settlement of the dispute by arbitration before a referee appointed by the Board of Trade, and in consequence the question was referred to the Hon. Alfred Lyttelton, and he made an award in favour of the Corporation for 320*l.*, with an addition of 5 per cent. and the costs of arbitration, holding that, under the provisions of the Electric Tramways Act, 1897, the appellant Company was bound to keep the junction between the granite setts on which the lines were laid and the road which was maintainable by the Corporation in a proper state of repair, and that if the Company failed to do so the respondents were entitled to do the work themselves, after giving statutory notice to the Company. The Divisional Court upheld the award. He (counsel) contended that both the award and the decision of the Divisional Court were wrong on the ground that the appellants were only bound to maintain and repair the portion of the roads upon which the tram lines ran.

In the result, their Lordships, without calling upon counsel for the respondents, dismissed the appeal with costs.

CASE UNDER THE LONDON BUILDING ACT.

BEFORE Alderman Sir John Knill, at the Guildhall, the adjourned summons against the Rev. Prebendary Ingram, Rector of St. Margaret's, Lothbury, and Mr. James Perrin, of 48, Frederick-street, Gray's Inn-road, was down for hearing.

Complaint was made under the London Building Act, 1894, by Mr. John Todd, Surveyor for the Eastern District of the City, who accused Mr. Perrin of having failed to serve a building notice upon him in regard to certain alterations being made to a gallery at the church of St. Margaret, Lothbury, and the Rev. Prebendary Ingram of refusing to permit him to survey the work when he visited the church on February 15.

Sir John Knill expressed the opinion that the work in question did come within the Act, and that, therefore, the District Surveyor had merely carried out his duty. He wished the parties to come to terms, and avoid fighting the case to the bitter end, for which reason he ordered an adjournment.

On the case being called, Mr. Savill (the Chief Clerk) reported that he had received a letter from the solicitor for the prosecution stating that since the adjournment notice had been given by the builder that facilities would be afforded the Surveyor, and under these circumstances he did not propose to proceed any further in the matter.

Sir John Knill: I am very pleased that the dispute has been amicably settled. It is the best thing that could be done.

Patents of the Week.

APPLICATIONS PUBLISHED.*

25,633 of 1906.—R. E. EVENDEN and J. L. BARING: *Moistening, Circulating, Cooling, Heating, Purifying, Aromatising, and otherwise Treating Air.*

This relates to an apparatus for treating air particularly applicable for the ventilation of workshops, halls, and other public places, comprising a pair of superposed vessels, from the upper of which water falls into the lower through a series of tubes, whence it is returned to the upper vessel again, an inlet between said vessels for air which is induced by the water falling from one vessel into the other, a casing arranged between the vessels down which the air and water pass, a dash-plate, an outlet for the air, and means for returning the water from the lower vessel to the upper one, the whole being arranged to produce a closed water-circulating circuit.

3,871 of 1907.—D. COOPER and C. H. COOPER: *Down-draught Preventing Devices for Chimney or other Conduits.*

This relates to a self-contained down-draught preventing device and extracting device for smoke, foul air, dust, or the like for chimneys, ventilating, and other conduits, consisting of a casing built in the chimney or conduit wall, sides permanently fixed to the casing and extending into the chimney, a plate pivoted to the lower end of the casing radially adjustable about its pivots, and a plate or door removably secured to the front of the casing, said door being adapted to leave a space between its lower edge and the bottom of the casing, or to have several spaces formed therein, the single space or plurality of spaces being protected by means of one or a plurality of overhanging lips or guards.

3,875 of 1907.—T. P. KOWTUNOFF: *Excavator or Machine for Carrying on Earthwork.*

This relates to an excavator or machine for carrying on earthwork, characterised by a combination of knives fastened to a movable frame placed on a trolley which can move on rails and transporters for carrying away the earth, the knives cutting a thin and wide layer of earth whilst the frame travels on the trolley, or the trolley itself on the rails, which earth is then carried away by the transporters and withdrawn from the machine.

4,239 of 1907.—F. M. WISE: *Sand-blast Apparatus.*

This relates to a sand-blast apparatus particularly adapted for cleaning the surfaces of stone, metal, wood, etc., and of the kind which comprise a reservoir and a combining chamber in which a current of air under pressure mixes with and from which it sweeps the sand against the object to be cleaned, the used sand being collected and conveyed back to the sand reservoir by an air-suction apparatus, thus rendering the apparatus automatic and self-supplying, and comprises a reservoir from which the sand is discharged into a mixing-chamber, from whence it is forcibly projected by means of

* All these applications are in the stage in which opposition to the grant of patents upon them can be made.

PATENTS.—*Continued on page 352.*

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xixb.; Auction Sales, xxxii.

Certain conditions, beyond those given in the following information, are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements: and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competition.

MAY 15.—**Tuam.**—SEWERAGE WORKS.—Tuam R.D.C. offer a prize of 50*l.* for the best set of plans, with estimate, for the sewerage of the town of Tuam. Plans and estimates to be sent to the Clerk of the D.C. on or before May 15. Mr. J. P. McDonogh, Clerk to Council.

Contracts.

BUILDING.

MARCH 21-APRIL 11.—**Epping.**—MANSE.—Epping Congregational Church Committee invite tenders for the erection of a manse in Lindsey-street, Epping. Names and addresses to the architect, Mr. Edgar F. Wilson, Hemnall-street, Epping.

MARCH 21.—**Swansea.**—ADDITIONS, ETC., TO SCHOOL. The Managers of Swansea Voluntary (Church of England) Schools invite tenders for alterations and additions to the Christ Church School, Swansea. Applications for quantities, etc., must be sent in, accompanied by a deposit of 2*l.* 2s., to Messrs. Margrave & Peacock, Metal Exchange, Swansea.

MARCH 23.—**Bailiff Bridge.**—CLUB, ETC.—Erection of a village club and institute at Bailiff Bridge. Plans, etc., may be seen, and bills of quantities obtained, at offices of Messrs. Joseph F. Walsh & Graham Nicholas, F.R.I.B.A., architects, Museum-chambers, Halifax, upon deposit of 2s. 6d.

MARCH 23.—**Dewsbury.**—HOUSES.—Works required in the erection of three dwelling-houses at Westtown, Dewsbury. Drawing, etc., may be seen, and copies of the bills of quantities obtained, at offices of Messrs. Joseph Firth & Son, architects, Vulcan-road, Dewsbury.

MARCH 23.—**Hayle.**—ALTERATIONS TO CHAPEL.—The Trustees of Copperhouse Wesleyan Chapel, Hayle, invite tenders for alterations to chapel front, etc. Tenders to Rev. P. Callier.

MARCH 23.—**High Wycombe.**—CHURCH WORK.—The Trustees of the Union Baptist Church, High Wycombe, invite the names of contractors who are desirous of tendering for rebuilding and restoring the church and premises injured by the late fire. Applications to be sent to the architect, Mr. Thomas Thurlow, High-street, High Wycombe.

MARCH 23.—**Prudhoe.**—HOUSE.—The erection of a house at Prudhoe Station for the Blaydon Co-operative Society, Ltd. Plans, etc., may be seen at the Prudhoe Station branch.

MARCH 25.—**Rochford.**—LAVATORIES.—Rochford Guardians invite tenders for the erection of additional lavatories and a washhouse at their Children's Home at Rochford. Plan, etc., may be seen at office of Mr. Frederic Gregson, Clerk, Southend-on-Sea.

MARCH 24.—**Paisley.**—ROOF SHEETING.—The Paisley Gas Corporation invite tenders for renewing the galvanised arc sheeting of two roofs, about 1,448 sq. yds., at their Gasworks, Blackstoun-road. Schedules may be obtained on application to Mr. Geo. R. Hislop, Engineer and Manager, Paisley Gasworks.

MARCH 24.—**Pontfadog.**—SCHOOL.—Denbighshire Education Authority invite tenders for the erection etc. of a new Elementary School at Pontfadog to accommodate eighty children. Plans, etc., can be inspected, and any further information obtained, at the offices of Mr. Walter D. Wiles, County Architect and Surveyor, 42a, High-street, Wrexham.

MARCH 24.—**Warrington.**—CONVENIENCES.—Warrington Sanitary Works Committee invite tenders for the construction of a ladies' and gentlemen's convenience in the Market Hall. Drawings, etc., may be seen, and forms, etc., obtained, at the office of the Borough Surveyor, Town Hall.

MARCH 25.—**Blaina.**—HALL.—The rebuilding of Hope Hall, Blaina, for the forward movement. Drawings, etc., may be seen, and bills of quantities obtained, at the offices of Messrs. Habershon, Fawckner, & Co., architects, 41, High-street, Newport. Plans may also be seen at the Secretary's, Mr. Thomas Austin, 18, Glanyr-afon-terrace, Blaina.

MARCH 25.—**Harpurhey, Manchester.**—STABLES, ETC.—The Paving, etc., Committee invite tenders for the erection of stables, sheds, offices, etc., at Factory-lane, Harpurhey. Drawings may be seen, and specification, etc., obtained, at the office of the City Architect, Town Hall, upon payment of 1*l.* 1s. All cheques and postal orders to be made payable to the order of "The Corporation of Manchester."

MARCH 25.—**Robert Town, Liversedge.**—HOUSES.—The various trades required in the erection of three houses at Robert Town, Liversedge. Plans, etc., may be seen, and quantities obtained, from Mr. Lister Coates, A.R.I.B.A., architect, Central Chambers, 10, Central-street, Halifax.

MARCH 25.—**Wester Manbeen.**—COTTAGES.—The mason, carpenter, slater, plumber, plaster, and painter works of three cottages to be erected at Wester Manbeen. The plans, etc., may be seen with Mr. John Wittet, architect, Elgin.

MARCH 26.—**Goathland.**—FARMHOUSE.—The erection of a new farmhouse at Hazel Head, near Goathland, on the Egton Estate, for Messrs. Foster. The plans, etc., may be seen, and bills of quantities obtained, on application at the office of Messrs. Edward H. Smales, A.R.I.B.A., architect, 5, Flowergate, Whitby.

MARCH 27.—**Maryport.**—MISSION HALL.—The erection of a mission hall, class-rooms, etc., at Grasslot, Maryport. Plans, etc., can be seen at offices of Mr. H. Foxall, architect, 54, Lowther-street, Carlisle. Quantities will be supplied on payment of a deposit of 1*l.* 1s.

MARCH 27.—**Saltley.**—STORM-WATER PUMPING STATION.—Birmingham Tame and Rea District Drainage Board invite tenders for the erection of a pumping station, 120 ft. in length. Written application to be made for bills of quantities to Mr. John D. Watson, M.Inst.C.E., Engineer to the Board, Tyburn, near Birmingham.

MARCH 27.—**Talbot, Llandaff.**—SCHOOLS.—Glamorgan C.C. invite tenders for:—(1) Erection of a new elementary school at Talbot (Llantrisant); (2) erection of a new elementary school at Llandaff; (3) erection of a new elementary school at Dinas Powis; (4) erection of boundary walls at the Council school site at Dinas Powis; (5) erection of boundary walls at the Council school site at Talbot (Llantrisant). Plans, etc., of works Nos. 1 and 2 may be seen, and copies of the bill of quantities obtained, at the Llantrisant and Llandaff Police-stations respectively. Plans may be seen, and copies of the specification obtained, for works 3, 4, and 5 at the Dinas Powis and Llantrisant Police-stations respectively. The plans and documents for all the works may be seen or obtained at offices of Mr. W. E. R. Allen, Deputy-Clerk of the C.C., Glamorgan County Offices, Westgate-street, Cardiff.

MARCH 28.—**Kewstoke.**—SCHOOL.—The Somerset County Education Committee invite tenders for the erection of a new school at Kewstoke, Weston-super-Mare. Drawings, etc., from Messrs. Price & Jane, Waterloo-street, Weston-super-Mare.

MARCH 28.—**Talgarth.**—BUILDINGS.—Brecon and Radnor Asylum, Talgarth, R.S.O., Visiting Committee invite tenders for the erection of the following buildings on the asylum estate:—(1) A house in stone; (2) a pair of cottages in stone; (3) a row of six cottages in brick. The plans, etc., may be seen, and particulars obtained, at the Clerk's office in the asylum.

MARCH 28.—**Wicklow.**—PREMISES.—Rebuilding premises, Abbey Hill, Wicklow, for Mr. Sylvester Delahunt, T.C. Quantities can be obtained on lodgment of 1*l.* 1s., Mr. Geo. T. Moore, C.E., architect, 1 and 2, Foster-place, Dublin.

* MARCH 30.—**East Ham.**—HOSPITAL.—The East Ham T.C. invite tenders for erection of convalescent and staff quarters block, cubicle or isolation block, and mortuary. For further particulars see advertisement in this issue.

MARCH 30.—**Filey, Blacktoft, etc.**—SCHOOLS, ETC.—East Riding of Yorkshire C.C. Education Committee invite tenders for the following works, viz.:—(*a*) The erection of a Council School to accommodate about 270 children at Filey; (*b*) the erection of a Council School for eighty-two children and teacher's house at Blacktoft; (*c*) the erection of a Council School for about fifty children and teacher's house at Boynton; (*d*) for alterations and additions to the Council School at Preston. Plans, etc., may be seen, and forms of tender obtained, on application to the Building Surveyor, County Hall, Beverley. Quantities in respect of the Filey schools only can be obtained upon depositing 1*l.* 1s.

MARCH 30.—**Southmolton.**—RESIDENCE.—The erection of a new residence for the Wesleyan Minister at Southmolton. Plans, etc., may be seen, and quantities obtained, from Mr. Lyddon, 97, East-street, Southmolton, or at the office of the architects, Messrs. W. C. Oliver & Son, A.R.I.B.A., Bridge End, Barnstaple.

MARCH 31.—**Anslow, Rolleston, Tutbury.**—SCHOOLS.—Staffordshire Education Committee invite tender for the erection of a new Council school at Anslow (to accommodate 138 children), or at Rolleston (132), or at Tutbury (328). Apply to Mr. Graham Balfour, Director of Education, County Education Offices, Stafford. Quantities will be supplied upon receipt of a separate deposit of 1*l.* 1s. in respect of each school.

MARCH 31.—**Batley.**—ADDITIONS, ETC., TO GRAMMAR SCHOOL.—Batley Education Committee invite tenders for work required in the provision of alterations and additions to the Girls' Grammar School, in Field Hill, Batley. Plans, etc., may be seen, and bills of quantities obtained, at the office of Messrs. W. Hanstock & Son, Branch-road, Batley, on Saturday morning, March 21.

MARCH 31.—**Kilmeague.**—REPAIRS, ETC.—The Select Vestry for repairs and alterations to Kilmeague Glebe invite tenders. Plans, etc., can be seen on application to the Rector, Kilmeague, Naas, Co. Kildare.

MARCH 31.—**Lerwick.**—POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for a new post-office at Lerwick. Drawings, etc., may be seen on application to H.M. Office of Works, Parliament-square, Edinburgh; or at the Post-office, Lerwick. Bills of quantities, etc., may be obtained at H.M. Office of Works, Edinburgh, on payment of 1*l.* 1s.

* MARCH 31.—**Staffordshire.**—NEW SCHOOLS.—The Staffs. Education Committee invite tenders for new Council Schools at Anslow, Rolleston, and Tutbury. For further particulars see advertisement in this issue.

MARCH 31.—**Ton Pentre.**—COTTAGES.—The erection of seven cottages at Ton-row, Ton Pentre, Rhondda, for Mrs. Mary Evans. Plans, etc., may be seen at office of Mr. W. D. Morgan, architect, 194, Ystrad-road, Pentre.

APRIL 1.—**Pontardawe.**—HALL.—The erection and completion of proposed public hall (to accommodate 1,500), together with large institute, etc., at Pontardawe. Plans, etc., may be seen by appointment with the Secretary, Mr. Philip Davies, Danygraig, Pontardawe, or at the office of Mr. W. Beddoe Rees, 3, Dumfries-place, Cardiff, where bills of quantities may be obtained upon deposit of 3*l.* 3s.

* APRIL 1.—**Shenfield.**—FOUNDATIONS, ETC.—The Guardians of the Parish of Poplar invite tenders for carrying out certain works for foundations and drainage connected with erection of a wood and iron building at Hutton Schools, near Shenfield, Essex. For further particulars see advertisement in this issue.

APRIL 2.—**Hampton.**—REFUSE DESTRUCTOR BUILDINGS.—Hampton U.D.C. invite tenders for the erection of refuse destructor buildings, etc., at the Sewage Disposal Works, Hanworth-road, Hampton. The drawings, etc., may be seen, and bills of quantities, etc., obtained, of Mr. Sidney H. Chambers, Surveyor to the Council, Public Offices, Hampton, Middlesex, accompanied by a deposit of 2*l.*

APRIL 7.—**Kirkwall.**—POST-OFFICE.—The Commissioners of H.M. Works and Public Buildings invite tenders for the enlargement of the head post-office at Kirkwall. Drawings, etc., may be seen on application to the Postmaster at Kirkwall or to H.M. Office of Works, Edinburgh. Bills of quantities, etc., may be obtained from H.M. Office of Works, Edinburgh, on payment of 1*l.* 1s.

* APRIL 7.—**Wolverhampton.**—POST-OFFICE.—The Commissioners of H.M. Works, etc., invite tenders for the enlargement of Wolverhampton Head Post-office. For further particulars see advertisement in this issue.

APRIL 9.—**Twickenham.**—CONVENIENCES.—Twickenham U.D.C. invite tenders for the construction of an underground convenience at the corner of York-street and London-road, Twickenham. The drawings, etc., may be seen, and bills of quantities obtained, on application at the office of Mr. Fred W. Pearce, F.S.I., Surveyor to the Council, Town Hall, Twickenham, and the payment at office of Mr. H. Jason Saunders, Clerk to the Council, of a deposit of 2*l.* 2s.

* APRIL 10.—**Leek.**—ELECTRIC WORKS EXTENSIONS.—The Leek U.D.C. invite tenders for engine, dynamo, and other foundations, and extensions to Generating Station Buildings in Station-street, Leek. For further particulars see advertisement in this week's issue.

APRIL 16.—**Sheffield.**—ADDITIONS TO BATHS.—Sheffield Health Committee invite tenders for the whole of the works required in the erection of additions and alterations to the Glossop-road Public Baths, Sheffield. Particulars, etc., may be obtained at the office of Mr. Arthur Nunweek, Architect, Town Hall Chambers, Sheffield, on payment of the sum of 1*l.* 1s.

APRIL 25.—**Great Crosby.**—SCHOOL.—Lancashire Education Committee invite tenders for the erection of a new public elementary school at Great Crosby, to accommodate 500 children, with laboratory, lecture, cookery, and manual instruction rooms. The plans may be seen, and bills of quantities obtained, at the office of the County Architect, Mr. Henry Littler, 16, Ribbesdale-place, Preston, by payment of a deposit of 2*l.*

NO DATE.—**Aberdovey.**—LODGE.—Tenders are invited by Mrs. Howell, of Craigydon, Aberdovey, for building a gamekeeper's lodge at Penherig, Aberdovey. The plans, etc., may be obtained on application to the architects, Messrs. Deakin & Howard Jones, Pla Ynys, Borth, R.S.O.

* NO DATE.—**Hackney.**—SHOPS.—Tenders are invited for the erection of two shops. For further particulars see advertisement in this issue.

NO DATE.—**Hurst.**—SHOPS, ETC.—Higher Hurst Co-operative Society, Ltd., invite tenders for the erection and completion of two shops and ten dwelling-houses in William-street, Hurst. Names and addresses to Mr. J. A. Lees, Secretary, at the office, Russell-street, Hurst, and enclosing a cheque value 1*l.*

NO DATE.—**Lesmahagow.**—SCHOOL.—Lesmahagow School Board invite offers for mason, joiner, plumber, slater, and plaster contracts of new higher grade

school in Lesmahagow. Applications for schedules to be made to Mr. J. N. Gilmore, architect, School Board Office, Lesmahagow, along with deposit of 1*l.*

ENGINEERING, IRON, AND STEEL.

MARCH 24. — **London.** — RAILS, ETC. — Bombay, Baroda, and Central India Railway Company Directors invite tenders for the supply of rails and fishplates (one specification). Tenders must be made on forms, copies of which, with specification, can be obtained at offices of Mr. W. V. Constable, Secretary, Gloucester House, 2, 3, and 4, Bishopsgate-street Without, London, E.C., on payment of 21s. each (which will not be returned).

MARCH 24.—**Selly Park.**—BRIDGE.—King's Norton and Northfield U.D.C. invite tenders for the erection of a ferro-concrete bridge over the River Rea, Dogpool-lane, Selly Park, in Hennebique patent construction. Plans may be seen at, and particulars, etc., obtained from, the engineer and surveyor, Mr. Ambrose W. Cross, A.M.Inst.C.E., Nos. 23 and 25, Valentine-road, King's Heath, on deposit of 1*l.* 1s.

MARCH 25. — **Manchester.** — PLANT. — Manchester Corporation Electricity Committee invite tenders for the supply of a 6,000 K.W. turbo-alternator, with exciter and condensing plant complete. Specifications, etc., may be obtained on application to Mr. F. E. Hughes, Secretary, Electricity Department, Town Hall, Manchester, on payment of the fee of 2*l.* 2s.

MARCH 25.—**Wamphray, Lockerbie.**—JOCKSTHORN BRIDGE.—The Lockerbie District Committee of the County of Dumfries invite tenders for taking down the existing timber bridge over the River Annan, near Wamphray Station, and for supplying and erecting a new steel girder bridge of three spans. The plans may be seen at the office of the engineers, Messrs. Crouch & Hogg, C.E., 14, Blythswood-square, Glasgow, from whom copies of the specification, etc., may be obtained on payment of 1*l.* 1s.

MARCH 31.—**London.**—BUFFERS, SPRINGS, ETC.—The Secretary of State for India in Council invites tenders for the supply of :—(1) buffers, etc.; (2) springs, bearing; (3) springs, volute; (4) wheels and axles; (5) switches and crossings. The conditions of contract may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W.

APRIL 1. — **Forest Gate.** — COOKING APPARATUS.— Poplar Board of Guardians invite tenders for alterations and additions to cooking apparatus at Forest Gate Branch Workhouse. Form of tender, etc., can be obtained from Mr. G. Herbert Lough, Clerk to the Guardians, Guardians' Office, Upper North-street, Poplar.

APRIL 1. — **Stanwell.** — WIDENING BRIDGE. — The Highways Committee of the C.C. of Middlesex invite tenders for works in connexion with the widening of Poyle County Bridge, Stanwell, Middlesex. Drawings, etc., may be seen, and form of tender, etc., obtained, at offices of Mr. H. T. Wakelam, M.Inst.C.E., County Engineer, Middlesex Guildhall, Westminster, S.W., on payment of a sum of 2*l.* 2s.

APRIL 4.—**Bradford.**—STEEL GIRDERS, ETC.—Bradford Corporation invite tenders for the supply and delivery at Bradford of 1,100 tons of steel girder rails (British standard section No. 4), 25 tons of fishplates, and 20 tons of joint pieces. Drawing, etc., may be obtained at the office of Mr. J. H. Cox, M.Inst.C.E., City Surveyor, Town Hall, Bradford.

APRIL 6.—**Glasgow.**—STEEL WORK.—Glasgow Corporation invite offers for the construction of the additional steel work required on footbridge over the North British Railway at Bellfield-street. Specification, etc., may be had on application at the Office of Public Works, City Chambers, Cochrane-street.

APRIL 6.—**Lossiemouth.**—BRIDGE.—For supplying and erecting over the River Lossie at Lossiemouth a footbridge 186 ft. long. Plans, etc., to be seen with, and schedules of quantities obtained from, Messrs. George Gordon & Co., civil engineers, Inverness.

APRIL 16. — **Penzance.** — COOKING APPARATUS. — Penzance Guardians invite tenders for the supplying and erection of a steam cooking apparatus at the Union Workhouse, situate in the Parish of Madron. A specification of the work to be carried out may be seen on application to Mr. P. B. Corin, M.Inst.M.E., Causewayhead, Penzance.

MISCELLANEOUS.

MARCH 23. — **Chorley.** — CARTING.—Chorley R.D.C. invite tenders for the carting of road materials for the highways repairable by the Council. Printed forms of tender may be obtained from Mr. John Whitfield, solicitor, Clerk for Highway Purposes, 10, High-street, Chorley, or from the Highway Surveyor, Mr. Edward Lawrence, Euxton, near Chorley.

MARCH 23.—**Kington.**—HAULING.—Kington R.D.C. invite tenders for hauling stone and other materials. Estimates of quantities and particulars of the several roads may be obtained from the surveyor, Mr. Francis Exton, Broxwood, Pembridge, who will supply forms of tender.

MARCH 24. — **Ashton-under-Lyne.** — WATER CARRIAGE CONVERSIONS.—The Sanitary Committee invite tenders for work in converting the closets at property situate Heyes-street, Manchester-road, Smith-street, and Martin-street, Guidebridge. Plans, etc., may be seen, and bills of quantities obtained, from Mr. Joseph Lowe, Sanitary Surveyor, Health Department, Town Hall Chambers.

MARCH 24.—**Belfast Union.**—LORRY.—The Board of Guardians invite proposals for supplying a lorry, complete with cover. Workhouse Master will supply full particulars.

MARCH 24.—**East Ham.**—SCAVENGING OF STREETS.—The T.C. of East Ham invite tenders for the scavenging of the streets in the borough. Form of tender, etc., may be obtained upon application to Mr. C. E. Wilson, Town Clerk, at the Town Hall, East Ham.

MARCH 25.—**Castle Gresley.**—SCAVENGING.—Repton R.D.C. invite tenders for emptying and cleansing of all dustpits, privies, cesspits, pans, tanks, and the removal of house refuse at Castle Gresley. Forms of tender, etc., may be obtained from Mr. C. F. Chamberlin, Clerk to the Council, Union Offices, Belvedere-road, Burton-on-Trent.

MARCH 25. — **Wortley.** — SCAVENGING.—The R.D.C. of Wortley invite tenders for the emptying, cleansing, and disinfecting of the ashpits, privies, and cesspools. The necessary information regarding the work to be carried out can be obtained from the Sanitary Surveyor, Mr. G. E. Beaumont, at his office at Grenoside.

MARCH 28. — **Darlington.**—SCAVENGING.—Darlington R.D.C. invite tenders for scavenging the Parish of Middleton-St.-George. Form of tender may be had on application to Mr. William Pallister, Union Offices, Darlington.

* MARCH 30. — **East Ham.** — REMOVAL OF HOUSE REFUSE.—The East Ham T.C. invite tenders for collection and removal, etc., of house refuse, for a period of three years. For further particulars see advertisement in this issue.

* MARCH 30. — **East Ham.** — SCAVENGING. — The East Ham T.C. invite tenders for the scavenging of streets for a period of three years. For further particulars see advertisement.

MARCH 31.—**Deeside.**—QUARRYING, ETC.—For quarrying and breaking stone for road repairs for the ensuing season within the Deeside District of Aberdeenshire. Particulars may be had from Mr. John Storrar, Road Surveyor, Aboyne.

APRIL 1.—**Lytham.**—WAGONS.—Lytham U.D.C. Gas Committee invite tenders for the supply of two 10-ton railway coal wagons, each 15 ft. 6 in. by 7 ft. by 4 ft. deep inside, with two side doors and strips, etc. Mr. Chas. A. Myers, Clerk to the Council, Council Offices, Lytham.

APRIL 2.—**Lambeth.**—SHOOT.—Lambeth B.C. invite tenders for the use of a shoot for dry road sweepings collected from the roads in the borough. Specification and forms of tender may be obtained upon application to Mr. Henry Edwards, C.E., Borough Engineer, 346, Kennington-road, S.E.

APRIL 7. — **Maldon.** — STEAM ROLLERS. — Maldon R.D.C. invite tenders for the hire of steam rollers and scarifier. Particulars, etc., can be obtained of Mr. Edgar J. Emnals, surveyor, 6, Market-hill, Maldon, Essex.

NO DATE. — **Frosterley.** — REMOVING EARTH.—The removal of about 26,000 yds. of earth, by steam navvy. For further particulars apply by letter to Secretary, Harehope Mining and Quarrying Company, Ltd., Frosterley, Weardale, Co. Durham.

PAINTING, etc.

MARCH 23.—**Aston Manor.**—PAINTING.—The Baths Committee invite tenders for the painting of the exterior of the Public Baths, Victoria-road. Specification can be seen, and bill of quantities obtained, on payment of 1*l.* 1s. Mr. F. W. Richardson, Borough Engineer and Surveyor, Council House, Aston Manor.

MARCH 23.—**Selby.**—PAINTING.—The North-Eastern Railway Directors invite tenders for painting the company's property on the Leeds and Selby line from Selby to Micklefield. Specification may be seen on application to Mr. H. J. Rudgard, the company's District Engineer, York. A deposit of 2*l.* will be required.

MARCH 28. — **Stafford.** — PAINTING.—The Corporation invite tenders for painting at the sanitary depôt premises, Lammascotes-road. Forms of tender, etc., can be obtained on application to Mr. W. Blackshaw, Borough Engineer and Surveyor, Borough Hall, Stafford.

MARCH 30.—**Chatham.**—PAINTING.—The T.C. invite tenders for painting :—(1) Town Hall (exterior); (2) Public Library (exterior) and caretaker's cottage adjoining (exterior); (3) railway street bridge and approaches, and fences at Waghorn Memorial; (4) fences, entrance lodge, and other buildings at the Cemetery, Maidstone-road. Full particulars, etc., may be obtained on application at the Borough Surveyor's office, Town Hall, Chatham.

* MARCH 30.—**Fulham.**—PAINTING, ETC.—The Fulham B.C. invite tenders for painting work and repairs to North Branch Library. For further particulars see advertisement in this issue.

* MARCH 30.—**St. Marylebone.**—PAINTING, ETC.—The Guardians of St. Marylebone invite tenders for painting, cleaning, and colouring (works, etc., at their houseless poor wards and south dispensary and Relief Offices, East-street, W., and at the north dispensary, Little Union-street, Lisson-grove, N.W. For further particulars see advertisement in this issue.

* APRIL 1.—**Forest Gate.**—REPAIRS, PAINTING, ETC. —The Guardians of the Parish of Poplar invite tenders for repairs, painting, etc., at Forest Gate Branch Workhouse. For further particulars see advertisement in this issue.

* APRIL 1. — **Hampstead.** — PAINTING, ETC. — The Metropolitan Asylums Board invite tenders for cleaning and painting works at the North-Western Fever Hospital, Lawn-road, Hampstead, N.W. For further particulars see advertisement in this issue.

APRIL 1.—**Parkeston.**—PAINTING.—The Managers of Parkeston Council School, Essex, invite tenders for external painting and other work. Specification can be seen at the schools, Parkeston, upon application to the Headmaster, at the office of the County Architect, Chelmsford, and at the office of Mr. G. C. Holland, Clerk, 4, Trinity-street, Colchester.

ROADS, SANITARY, AND WATER WORKS.

MARCH 23. — **Basford.** — STREET WORKS. — Basford R.D.C. invite tenders for the making-up of private streets in the Parish of Selston. Drawings, etc., may be seen on application to Mr. Geo. W. Hawley, Surveyor to the Council, Burton-buildings, Parliament-street, Nottingham, from whom all information, etc., may be obtained on payment of a deposit of 2*l.* 2s.

MARCH 23.—**Rayleigh.**—SEWER.—Rochford R.D.C. invite tenders for constructing about 640 yds. of sewer at London Hill, Rayleigh. Plan, etc., which may be seen, on application to Mr. H. T. Sidwell, surveyor, Rayleigh.

MARCH 24.—**Blaby.**—SEWER.—Blaby R.D.C. invite tenders for the construction of 135 lin. yds. of 9-in. diameter stoneware pipe sewer, together with the necessary manholes, etc., along Leicester-road, in the Parish of Blaby. Plans, etc., can be seen at the office of the Council's Surveyor, Mr. J. Turner, Blaby-road, South Wigston.

MARCH 24.—**Gateshead.**—PATHWORK.—For cement pathwork in position on various roads and streets, as may be required for one year. Quantities, etc., may be obtained at the office of Mr. N. P. Pattinson, Borough Engineer, Town Hall, Gateshead.

MARCH 24.—**Gateshead.**—PAVING.—Tenders are invited for the paving, etc., of streets. Plans, etc., may be seen, and quantities obtained, at the office of Mr. N. P. Pattinson, Borough Engineer, Town Hall, Gateshead.

MARCH 24.—**Ripon.**—WIDENING.—Ripon R.D.C. invite tenders for widening of Long Swales-lane, Kirkby Malzeard. Full particulars, etc., may be had on application to the surveyor, Mr. J. W. Plewes, Skellfield-terrace, Ripon.

MARCH 24.—**Stoke Newington.**—REPAVING.—The B.C. invite tenders for repaving with soft wood a portion of Manor-road, Stoke Newington; also for taking up wood paving in portion of Seven Sisters-road, providing dry feed, and relaying wood paving with bituminous grout. Conditions, etc., may be obtained on application to Mr. W. F. Loveday, Borough Surveyor, Town Hall, Milton-road, Stoke Newington, N.

MARCH 25.—**Cardiff.**—ROAD WORKS.—For forming, metalling, paving, kerbing, and channelling streets. Drawings, etc., may be seen, and forms of tender obtained, at the City Engineer's Department, City Hall, Cardiff.

MARCH 25.—**Kilchattan.**—WATERWORKS.—The Bute District Committee of the C.C. of Bute invite tenders for taking-up old water main at Kilchattan and replacing it by a 6-in. cast-iron pipe for a distance of about 1,500 yds., with valves, hydrants, etc. Drawings may be seen at the office of Mr. Gilbert Thomson, civil engineer, 164, Bath-street, Glasgow, from whom copies of the specification, etc., may be obtained on payment of 2*l.* 2s.

MARCH 26. — **Bugle.** — RESERVOIR. — St. Austell R.D.C. invite tenders for the construction of a reservoir at Stenalees, in the Parish of St. Austell Rural, in connexion with the water supply to the Bugle District. Drawings, etc., may be seen at the office of the engineer, Mr. H. S. Hancock, Sydney-place, St. Austell, and copies may also be seen at office of Mr. John Stephens, Clerk to the Council, Cross-lane, St. Austell.

MARCH 26. — **Hawarden.** — SEWERS. — Hawarden R.D.C. invite tenders for the construction of sewers, 6-in. and 9-in. diameter, along streets and back passages at nine houses, Shotton, Queen's Ferry, Pentre, and Sandycroft. Plans, etc., can be inspected at the office of the engineer, Mr. A. C. Williams, 6, Godstall-chambers, Chester.

MARCH 26.—**Holbrook.**—SEWER.—Belper R.D.C. invite tenders for the construction of about 300 yds. of 9-in. sanitary pipe sewer, with the necessary manholes, lampholes, and ventilators, in the Parish of Holbrook; also for the construction of five ventilators from the main sewers in the Parish of Duffield. Plans, etc., may be seen, and bill of quantities obtained, upon application to Mr. Robt. C. Cordon, engineer and surveyor, Duffield, near Derby, on deposit of 1*l.* 1s.

MARCH 30.—**Seghill.**—SEWERS.—The Seghill U.D.C. invite tenders for the construction of about 1,800 yds. of earthenware and cast-iron pipe sewers at Seghill Colliery. Plans, etc., may be seen, and quantities, etc., obtained, on application to the engineer, Mr. J. E. Parker, A.M.Inst.C.E., Post-Office-chambers, Newcastle-upon-Tyne, on depositing a cheque for 1*l.* 1s.

MARCH 30. — **Surbiton.** — STREET WORKS. — The U.D.C. of Surbiton invite tenders for private street works at Broomfield, Derby, and Cotterill roads, Surbiton. The drawings, etc., can be seen at office of Mr. Henry T. Mather, Surveyor to the Council, Council Offices, Ewell-road, Surbiton, and a copy of the specification obtained between the hours of 10 and 1 o'clock. A deposit of 1*l.* 1s. must be made.

MARCH 31. — **Banstead.** — MAKING-UP. — Epsom R.D.C. invite tenders for the making-up of Diceland, Shrubland, and Ferndale roads, Banstead. A plan, etc., of the works and form of contract may be seen at the office of the Surveyor of Highways, Mr. T. E. Ware, Waterloo-road, Epsom, where forms of tender, etc., may be obtained.

MARCH 31. — **Bridgwater.**—SEWER.—The T.C. of Bridgwater invite tenders for the construction of a glazed sanitary socket pipe sewer in Mount-street and Northgate. Plans, etc., may be seen, and form of tender, etc., obtained, at the offices of the Borough Surveyor, Municipal Buildings, High-street.

MARCH 31.—**Ealing.**—PRIVATE STREET IMPROVEMENTS. —Ealing T.C. invites tenders for the making-up of roads. The drawings, etc., may be seen, and forms of tender, etc., obtained, from Mr. Charles Jones, M.Inst.C.E., Borough Engineer, Town Hall, Ealing, W., upon payment of a deposit of 10s. 6d. for each road.

MARCH 31.—**Ealing.**—PUBLIC IMPROVEMENT.—Ealing T.C. invites tenders for the widening of Ealing-road South (from Chandos-avenue to Darwin-road). The drawings, etc., may be seen, and forms of tender, etc., obtained, from Mr. Charles Jones, M.Inst.C.E., Borough Engineer, Town Hall, Ealing, W., upon payment of a deposit of 2*l.* 2s.

* APRIL 1. — **Hampstead.**—DRAINAGE.—The Metropolitan Asylums Board invite tenders for drainage work to four wards at the North-Western Fever Hospital, Lawn-road, Hampstead, N.W. For further particulars refer to an advertisement in this issue.

APRIL 1.—**Hove.**—SEWER AND PAVING WORKS.—Hove Corporation invite tenders for executing new sewer works in Glebe-villas, and for executing paving and other works in Grange-road. Further particulars may be obtained, and plans, etc., seen, at the office of the Borough Surveyor (Mr. H. H. Scott).

APRIL 1.—**Sale.**—STREET WORKS.—Sale U.D.C. invite tenders for the sewering, draining, levelling, etc., of roads and passages. Specifications, etc., may be seen, and bills of quantities obtained, at the office of Mr. W. Holt, A.M.Inst.C.E., Engineer and Surveyor, Council Offices, Sale, on deposit of 2*l.* 2s.

APRIL 1. — **Springfield.** — DRAINAGE. — The Joint Sewerage Committee of the Chelmsford Urban and

Rural District Councils invite tenders for underdraining about sixty acres of their sewage farm at Brook End, Springfield, near Chelmsford. Specifications, etc., may be obtained, and plans may be inspected, at the office of the Borough Surveyor, 16, London-road, Chelmsford.

* APRIL 1.—**Wanstead.**—ROADS AND SEWERS.—The Wanstead U.D.C. invite tenders for:—(*a*) The construction of six contact beds at their sewage farm; (*b*) the widening of a portion of the High-street, including the laying of kerb, channelling, and paving. For further particulars see advertisement in this issue.

APRIL 2.—**Winwick, Daventry.**—SEWAGE WORKS.—Daventry R.D.C. invite tenders for constructing sewage outfall works and laying sewers in the Parish of Winwick. Plans can be seen at office of Mr. J. D. Spearing, Clerk of the Council, The Moot Hall, Daventry, and specifications, etc., obtained, on application to the Engineer to the Council, Mr. C. Russell Hall, Congleton, Cheshire, upon the payment of 1*l.* 1s.

APRIL 4.—**Chingford.**—STREET WORKS.—Chingford U.D.C. invite tenders for making-up, kerbing, channelling, and paving the pathway in Station-road, known as "The Parade," in accordance with plans, etc., prepared by the Council's Surveyor, copies of which may be obtained on payment of a deposit of 2*l.* 2s. Mr. Leonard C. Bowen, Clerk to the Council, 34, Station-road, Chingford.

APRIL 4.—**Stretford.**—STREET WORKS.—Stretford U.D.C. invite tenders for paving, etc., in the passage behind 28 to 48, Moreton-avenue. The drawing, etc., may be seen, and form of tender obtained, on application to Mr. Ernest Worrall, the Council's Surveyor, on deposit of a cheque for 2*l.* 2s.

APRIL 6.—**Dublin.**—WATER TANK.—The Improvements Committee of the Corporation of Dublin invite tenders for the supply, delivery, and erection of a cast-iron water tank of about 46,000 gallons capacity, supported on concrete walls, and fitted with valves, pipes, etc., Pigeon House-road, in the City of Dublin. The drawings, etc., may be obtained at the office of the City Engineer, City Hall, Dublin, and at the office of the Consulting Engineer, Mr. George Chatterton, M.Inst.C.E., 6, The Sanctuary, Westminster, on payment of a sum of 2*l.* 2s. (crossed cheques only will be received in payment).

APRIL 6.—**Farnborough.**—STREET WORKS.—The Bromley R.D.C. invite tenders for certain works of sewering, levelling, metalling, channelling, and making good the roads in the Parish of Farnborough, known as Cobden-road, Gladstone-road, Palmerston-road, Pitt-road. PLANS, etc., may be seen, and specifications, etc., obtained, at the office of the Council's Surveyor, Hampden House, Station-road, Sidcup, Kent, on payment of 1*l.* 1s.

APRIL 6.—**Rothwell.**—ROAD IMPROVEMENTS.—Rothwell U.D.C. invite tenders for laying concrete foundations and paving with granite setts, etc., for a distance of one mile one and a half furlongs on the Wakefield main road. Conditions, etc., may be had on application to Mr. J. Southwart, Surveyor, at the Council Offices, if accompanied by a cheque made payable to "The Treasurer" for 2*l.* 2s.

APRIL 6.—**Warrington.**—ROAD WORKS.—The Paving and Sewerage Committee of the Council of the County Borough of Warrington invite tenders for the forming and paving of six streets and thirty-one passages. Drawings, etc., may be seen, and forms of tender, etc., obtained, at the office of the Borough Surveyor, Town Hall.

APRIL 7.—**Handsworth.**—STORAGE OF WATER.—Handsworth U.D.C. invite tenders for the carrying out of additional storage at the Council's Waterworks, Hagg-lane, Gleadless. Drawings may be seen, and specification, etc., obtained, on application to Mr. Bernard Powell, Engineer and Surveyor, at the Council Offices, Woodhouse, Sheffield, on payment of a deposit of 2*l.* 2s.

APRIL 7.—**Wellingborough.**—WATERWORKS.—The U.D.C. of Wellingborough invite tenders for the construction of a reinforced concrete clear-water tank at their pumping station at "Bushfield" Works. Plans, etc., may be obtained at the office of Mr. E. Y. Harrison, the Council's Surveyor, Park-road, Wellingborough.

APRIL 9.—**Crawley Down and Copthorne.**—SEWER WORKS.—East Grinstead R.D.C. invite tenders for works in connexion with the sewerage and sewage disposal of the districts of Crawley Down and Copthorne, in the Parish of Worth. Drawings, etc., may be seen at the offices of the engineers, Messrs. Beesley, Son, & Nichols, MM.Inst.C.E., of 11, Victoria-street, Westminster, S.W., where also specification, etc., can be obtained on deposit of 5*l.*

APRIL 11.—**Nelson.**—RESERVOIR.—Nelson Corporation invite tenders for the construction of a storage reservoir (to hold 160 000,000 gallons) in the Ogden Valley, situate about four miles from Nelson. Plans may be seen, and specifications, etc., obtained, at the offices of the engineers, Messrs. John Newton, Son, & Bayley, 17, Cooper-street, Manchester, and at the office of the Water Manager, Town Hall, Nelson, on payment of 5*l.* (cheque to be made payable to the Nelson Corporation, and crossed).

APRIL 11.—**Templecombe.**—WATER SUPPLY.—Wincanton R.D.C. invite tenders for sinking and lining a dug well 125 ft. deep in the Parish of Stowell, between Templecombe and Milborne Port stations. Plan, etc., may be inspected at the Railway Hotel, Templecombe, or at the office of the engineer, Mr. William Phelps, C.E., at Charlton-road, Shepton Mallet, who will also supply forms of tender, and, if desired, plan, etc., on receipt of P.O. for 10s., which will not be returnable.

NO DATE.—**Brook and Llantwit.**—EXCAVATING.—Llantrisant and Llantwit Fardre R.D.C. invite tenders for the labour required in excavating about 670 lin. yds. of trench in which to lay a cast-iron water main between Brook Villa and Llantwit Main. Plans, etc., may be seen, and bill of quantities obtained, from Mr. Gomer S. Morgan, surveyor, School-street, Pontyclun, on payment of a deposit of 1*l.*

* NO DATE.—**Finchley.**—NEW ROAD.—Tenders are invited for a new road at Finchley for Messrs. Done, Hunter, & Co., surveyors, 1, Broadway, Cricklewood. For further particulars see advertisement in this issue.

STONE, MATERIALS, AND STORES.

MARCH 23.—**Belfast.**—STORES.—Belfast Tramways and Electricity Committee invite tenders for twelve months' supply. Forms of tender, etc., may be obtained on application to the City Electrical Engineer, Electricity Works, East Bridge-street, Belfast.

MARCH 23.—**Bridge.**—ROAD MATERIAL.—The R.D.C. of Bridge invites tenders for the supply of surface-picked and other hard flints and gravel; also for carting out stones and for the supply of horse, cart, and man. Forms may be had on application to the District Surveyor, Mr. S. Sladden, Littlebourne, Dover.

MARCH 23.—**Holbeck.**—BRICKLAYERS', ETC., WORK.—Tenders wanted for bricklayers', joiners', tinner's work. Tenders and forms of application may be had at office of Mr. J. B. Moore, Clerk, Union Offices, Holbeck, Leeds.

MARCH 23.—**King's Lynn.**—ROAD MATERIAL.—The Corporation invites tenders for the supply of road materials. Particulars can be obtained on application to Mr. J. H. Webb, Borough Surveyor, Town Hall, King's Lynn.

MARCH 23.—**Tynemouth.**—MATERIALS.—Tynemouth Corporation invite tenders for supplying drain pipes, cement, horse shoeing, bar and other iron, plumbers' materials, scavengers' brooms, spades and other tools, and general stores. Full particulars, etc., can be obtained at the office of Mr. John F. Smillie, Borough Surveyor.

MARCH 23.—**Warrington.**—GRANITE, ETC.—The Paving and Sewerage Committee of the Council of the County Borough of Warrington invite tenders for 4,000 tons of 4-in. granite, whinstone, or syenite cubes. Forms of tender, etc., may be obtained at the office of the Borough Surveyor, Town Hall.

* MARCH 24.—**Edmonton.**—STONEWARE PIPES.—The Edmonton U.D.C. invite tenders for supply and delivery of stoneware pipes. For further particulars see advertisement in this issue.

MARCH 24.—**Halifax.**—PLUMBING MATERIALS, ETC.—Halifax Guardians invite tenders for the supply of ironmongery, timber, plumbing materials, etc. Estimates of the quantities likely to be required, and forms of tender, may be obtained at offices of Mr. Arthur T. Longbotham, Solicitor and Clerk to the Guardians, 4, Carlton-street, Halifax.

MARCH 24.—**London.**—SCREWS.—The Secretary of State for India in Council invites tenders for the supply of coach screws. The conditions, etc., may be obtained on application to the Director-General of Stores, India Office, Whitehall, S.W.

MARCH 24.—**Londonderry.**—WOOD BLOCKS.—Tenders are invited for 50,000 Jarrah wood paving blocks, 9 in. by 4 in. by 3 in., to be delivered in Londonderry. Special form of tender to be used, which can be had on application to Mr. James Stewart, Secretary, Londonderry Bridge Commissioners, Londonderry.

MARCH 24.—**Sutton Bridge.**—MATERIALS.—Sutton Bridge U.D.C. invite tenders for the supply of road material. Mr. Leopold C. Harvey, Clerk to the Council, Holbeach.

MARCH 24.—**Wolverhampton.**—SUPPLIES.—The Guardians invite tenders for the supply of articles. Lists and particulars of all the articles, with forms of tender, may be obtained from office of Mr. Frank Harrison, Clerk to the Guardians, Union Offices, Wolverhampton.

MARCH 25.—**Bredbury.**—ANNUAL CONTRACTS.—Bredbury and Romiley U.D.C. invite tenders for team labour; also for the supply of grit setts, curbs, concrete and Lancashire flags, macadam, tar, creosote oil, chippings, brushes, earthenware pipes, bends, and junctions. Samples to be forwarded to the surveyor, School Brow, Bredbury, and from whom further particulars can be obtained.

MARCH 25.—**Maldon.**—WATER MAIN.—The T.C. of Maldon invite tenders for the supply of about 300 yds. of 8-in. cast-iron water mains. Specifications, etc., may be had on application to the Borough Surveyor, Municipal Offices, Maldon.

MARCH 25.—**Manchester.**—TIMBER.—The Cleansing Committee of the Manchester Corporation invite tenders for timber. Specification, etc., may be obtained upon application to Mr. R. Williamson, Superintendent of the Cleansing Department, Town Hall, Manchester.

MARCH 25.—**Romney Marsh.**—ROAD MATERIALS.—Romney Marsh R.D.C. invite tenders for supply and delivery of material, consisting of 1,880 yds. of rock, 1,980 yds. of gravel, 1345 tons of beach. Mr. William B. Smith, District Surveyor, New Romney.

MARCH 25.—**Ware.**—GRANITE.—The Ware U.D.C. invite tenders for the supply of broken blue Guernsey granite. Mr. Geo. H. Gisby, Clerk to the Council, Ware, Herts.

MARCH 26.—**Chatham.**—ROAD MATERIALS.—The T.C. invite tenders for the supply of 2,880 tons 2½-in. broken granite, 2,250 cubic yds. surface-picked flints, 250 tons Inverkeithing granite setts. Specification, etc., can be obtained on application at the Borough Surveyor's offices, Town Hall, Chatham.

MARCH 26.—**Chelmsford.**—GRANITE AND FLINTS.—The R.D.C. of Chelmsford invite tenders for the supply and delivery of granite and flints. Forms of tender, etc., may be obtained on application to Mr. F. E. H. Powell, Surveyor of Highways, Council Offices, Bank Chambers, New-street, Chelmsford.

MARCH 26.—**Chelmsford.**—MATERIALS.—The R.D.C. of Chelmsford invite tenders for the supply of materials, and for the maintenance of the district highways. Forms of tender and all particulars may be obtained on application to Mr. F. E. H. Powell, Surveyor of Highways, Bank Chambers, New-street, Chelmsford.

MARCH 26.—**Fulham.**—UNBROKEN GRANITE.—For the supply of 400 tons of Guernsey granite spalls (large) for the Workhouse, Fulham Palace-road. Hammersmith, W. Forms to be obtained at office of Mr. E. J. Mott, Clerk to the Guardians, Guardians' Offices, 129, Fulham Palace-road, Hammersmith, W.

MARCH 26.—**Horsham.**—ROAD MATERIAL.—Horsham R.D.C. invite tenders for road material and carting for year ending March 31, 1909. Forms of tender, etc., may be obtained on application to the Surveyor, Mr. W. Dengate, 58, Park-street, Horsham, on receipt of a stamped addressed foolscap envelope.

MARCH 26.—**Rhondda.**—ROAD MACADAM.—Rhondda U.D.C. invite tenders for:—(1) For the supply of 2,000 tons of granite or basalt road macadam; (2) for the supply of 8,000 tons of limestone macadam. Specification, etc., may be obtained on application to Mr. W. J. Jones, Engineer and Surveyor, Public Offices, Pentre, Rhondda.

MARCH 26.—**Woolwich.**—CONTRACTS.—The Guardians of the Woolwich Union invite tenders for builders' supplies to the Workhouse, Infirmary, Cottage Homes, in the parishes of Plumstead, Woolwich, and Charlton for six months. Forms of tender may be obtained at the Clerk's offices, at the Workhouse.

MARCH 27.—**Croft.**—ROAD MATERIALS, ETC.—Croft R.D.C. invite tenders for leading and supply of whinstone and slag. Forms of tender may be obtained on application to the surveyor, Mr. John Hodgson, North Cowton.

MARCH 27.—**Lytham.**—MATERIALS.—The Lytham U.D.C. invite tenders for the supply of materials. Specifications, etc., may be obtained at the office of the surveyor by forwarding stamped addressed foolscap envelope.

MARCH 27.—**Manchester.**—OIL.—Manchester Corporation Gas Committee invite tenders for the supply of a cargo, by the end of July next, of 3,000 to 4,000 tons of oil for the manufacture of carburetted water gas. Apply (in writing only) to Mr. Charles Nickson, Superintendent of the Gas Department.

MARCH 27.—**Middleton.**—SETTS, CURBS, ETC.—The Corporation of Middleton invite tenders for setts, flags, sanitary tubes, granite, macadam, cast-iron manholes and street grids, waste water-closets, and lime. Further particulars, etc., may be obtained from Mr. Welburn, Borough Surveyor, Town Hall, Middleton.

MARCH 27.—**Oundle.**—MATERIALS.—Oundle U.D.C. invite tenders for granite and slag. Forms of tender may be obtained on application to Mr. Robert Knight, Clerk to the said Council, New-street, Oundle.

MARCH 23.—**Coventry.**—STORES.—Coventry Waterworks and Fire Brigade Committee invite tenders for the supply and delivery of cast-iron pipes, lead pipes, solder, hydrant and valve boxes, etc. Forms of tender, etc., may be obtained, and samples inspected, on application to Mr. J. E. Swindlehurst, M.Inst.C.E., Water Engineer, St. Mary's Hall.

MARCH 28.—**Dewsbury.**—DISINFECTANTS.—The Corporation invite tenders for the supply of ten tons of disinfecting powder and a quantity of disinfecting fluid. Mr. H. Ellis, Town Clerk, Town Hall, Dewsbury.

MARCH 28.—**Docking.**—MATERIALS, ETC.—The R.D.C. of Docking invite tenders for the supply of materials and team labour for the several parishes in the district. Forms of tender, etc., can be obtained from Mr. W. W. Hopking, Great Bircham, or Mr. J. Johnson, South Creake.

MARCH 28.—**Epsom.**—STORES.—Epsom U.D.C. invite tenders for the supply of stores, etc. Specification, etc., may be obtained upon application to the surveyor, Mr. E. R. Capon, "Bromley Hurst," Church-street, Epsom.

MARCH 28.—**Maidstone.**—MATERIALS.—Kent C.C. Bridges and Roads Committee invite tenders for the supply of shovels, forks, scavenging brooms, scoops, scrapers, etc. Particulars and forms of tender may be obtained on application to the County Surveyor, West Borough Chambers, Maidstone.

MARCH 28.—**Newmarket.**—GRANITE.—Newmarket R.D.C. invite tenders for the supply of 4,500 tons (more or less) of 1¼-in. and 1⅝-in. gauge best broken Leicestershire granite metalling. Mr. S. J. Ennion, Clerk, Newmarket.

MARCH 28.—**New Windsor.**—STORES.—The Corporation invite tenders from local tradesmen only for the supply of tools and ironmongery. The forms of tender may be obtained upon application at the Borough Surveyor's office, Alma-road, Windsor.

MARCH 28.—**Pocklington.**—STONE.—Pocklington R.D.C. invite tenders for the supply of best blue stone and slag for repairing roads. Forms of tender can be obtained from Mr. Thomas Robson, Clerk, Pocklington.

MARCH 28.—**Walsall.**—CREOSOTED WOOD PAVING BLOCKS.—Tenders are invited for the supply of about 65,000 creosoted Baltic redwood paving blocks. Specification, etc., may be obtained on application to the Borough Engineer, Mr. John Taylor, Council House, Walsall, to whom a sample block should be sent.

MARCH 30.—**Bognor.**—SUPPLIES.—Bognor U.D.C. invite tenders for the supply of flints, gravel, cement, road rolling, and timber. Specifications, etc., may be obtained from Mr. Oswald A. Bridges, Council Surveyor, Bognor.

MARCH 30.—**East Grinstead.**—ROAD MATERIALS, ETC.—East Grinstead U.D.C. invite tenders for steam rolling and road materials. Forms of tender, etc., may be obtained from Mr. W. E. Woollam, Engineer and Surveyor, Council Offices, London-road, East Grinstead.

MARCH 30.—**Edinburgh.**—PIPES, ETC.—Edinburgh Corporation invite tenders for the supply of cast-iron pipes and pavement boxes for the year from May 16, 1908. Specifications, etc., can be obtained at the engineer's office, Dewar-place, Edinburgh, on payment of a deposit of 10s.

MARCH 30.—**Lydd.**—ROAD MATERIALS.—The T.C. invite tenders for the supply and delivery at Lydd Railway Station of 300 tons 1½-in. gauge Rhenish basalt, 10 tons 1¼-in. gauge Rhenish basalt, 10 tons ⅜-in. gauge chippings, 175 yds. Kent ragstone, broken. Mr. Thomas Kettle, Borough Surveyor, Lydd.

MARCH 30.—**Manchester.**—STORES.—Lancashire and Yorkshire Railway Directors invite tenders for the supply of articles during the twelve months. Further particulars, etc., may be obtained on application to Mr. Waring, Stores Department, Osborne-street, Manchester.

MARCH 30.—**Normanton.**—MATERIALS.—Normanton U.D.C. invite tenders for the supply of flags, kerbs, channels, setts, granite, limestone, and whinstone for the ensuing twelve months. Forms of tender can be obtained from Mr. A. Hartley, Surveyor, County Chambers, Castleford.

MARCH 30.—**Rhymney.**—MATERIALS, ETC.—Rhymney U.D.C. invite tenders for:—No. 1, the hiring of a

10-ton steam roller and scarifier for about three months; No. 2, about 2,000 tons of clean limestone; No. 3, about 300 tons limestone gravel; No. 4, haulage of limestone and gravel per ton; No. 5, horse, cart, and man (daywork); No. 6, also for street improvements in Rhymney; No. 7, also oak posts and tube fencing at the Old Furnace, Llechryd, about 93 yds. Forms to be obtained from Mr. W. Lloyd Marks, surveyor, 61, High-street, Rhymney.

MARCH 30.—**Sevenoaks.**—ROAD MATERIAL.—Sevenoaks U.D.C. invite tenders for 1,305 yds. of clean local stone. Specifications, etc., may be obtained of Mr. Samuel Towlson, A.M.Inst.C.E., Surveyor to the Council, Argyle-road, Sevenoaks.

MARCH 30.—**Uxbridge.**—GRANITE, ETC.—Uxbridge R.D.C. invite tenders for granite, gravel, and flints. Forms of tender, etc., may be obtained from Mr. Edmund Birks, District Surveyor, Town Hall, Uxbridge.

MARCH 30.—**Waltham Holy Cross.**—ANNUAL CONTRACTS.—The U.D.C. invite tenders for the supply and delivery of materials for a period of twelve months. Forms of tender may be had on application to Mr. W. T. Streather, A.M.Inst.C.E., Surveyor to the Council, Town Hall, Waltham Abbey, N.

MARCH 31.—**Bridgwater.**—DRAINS.—The T.C. invite tenders for about 722 yds. of stoneware pipe drains. All particulars, etc., may be obtained at the Municipal Offices, High-street, Bridgwater.

MARCH 31.—**Epsom.**—ROAD MATERIALS, ETC.—Epsom R.D.C. invite tenders:—(*a*) For the supply of road materials; (*b*) for carting of materials; and (*c*) for watering. Particulars and forms of tender may be had on application to Mr. T. E. Ware, Surveyor to the Council, Waterloo-road, Epsom.

MARCH 31.—**Great Yarmouth.**—ROAD MATERIALS.—The Great Yarmouth T.C. invite tenders for the supply of road materials. Specifications, etc., can be obtained at office of Mr. J. W. Cockrill, M.Inst.C.E., Borough Surveyor, Town Hall, Great Yarmouth.

MARCH 31.—**Leeds.**—STORES.—Leeds Corporation invite tenders for the supply of goods required for the Electric Lighting Department up to March 31, 1909. Schedules, etc., may be had on application to Mr. H. Dickinson, Manager of the Electric Lighting Department, 1, Whitehall-road, Leeds.

MARCH 31.—**Peterborough.**—MATERIALS.—The City Council invite tenders for the supply of broken granite, edging, etc., and Portland cement. Specifications, etc., may be obtained at office of Mr. J. W. Walshaw, City Surveyor, Guildhall, Peterborough.

MARCH 31.—**Ramsey.**—GRANITE.—Ramsey U.D.C. invite tenders for the supply of 700 tons of broken granite. Mr. Richd. F. Serjeant, Clerk to the Council, Ramsey, Huntingdonshire.

APRIL 2.—**Dublin.**—OIL.—The Commissioners of Irish Lights invite tenders for the supply and delivery at certain ports round Ireland of 28,000 Imperial gallons, more or less, of the finest quality heavy mineral oil. Forms of tender, etc., can be obtained on application to Mr. Hubert G. Cook, Secretary, Irish Lights Office, Dublin.

APRIL 4.—**Faversham.**—MATERIALS.—The Corporation invites tenders for the supply of Portland cement, double distilled tar, and crushed sea shell. Particulars, etc., can be obtained from, and a sample of the crushed shell and tar seen at, the office of the Borough Surveyor, Mr. S. Percy Andrews, 20, West-street, Faversham.

APRIL 6.—**Glasgow.**—STORES.—The Corporation of Glasgow invite tenders for the supply of stores for one year. Specification, etc., can be obtained on application to Mr. James Dalrymple, General Manager, 46, Bath-street, Glasgow.

APRIL 6.—**Wolverhampton.**—ANNUAL CONTRACTS FOR STORES.—Portland cement, macadam, broken slag, paving and building bricks, brooms, stoneware pipes, etc. Specifications, etc., may be obtained on application at the office of Mr. George Green, Borough Engineer, Town Hall, Wolverhampton.

APRIL 7.—**Maldon.**—MATERIALS.—Maldon R.D.C. invite tenders for the supply and delivery of granite, slag, Kentish flints, picked stone, gravel. Forms of tender, etc., can be obtained of Mr. E. J. Eunals, Surveyor, 6, Market-hill, Maldon, Essex.

APRIL 9.—**Wigan.**—ROAD MATERIALS.—Wigan R.D.C. invite tenders for road materials for the year ending March 25, 1909. For further particulars apply to Mr. R. B. Marsh, Highway Surveyor, Dalton, Parbold, near Southport.

Public Appointment.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*CLERK OF WORKS	Norfolk Education Com.	2 guineas per week	March 31

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale
*BUILDER AND CONTRACTOR'S PLANT—At 119B, Holland-park-avenue, W.	H. W. Smith	March 20
*BUILDER AND DECORATOR'S STOCK AND PLANT—Clarendon-road, Watford	H. W. Smith	March 23
*SCAFFOLDING AND TIMBER, BATTERSEA—On the Premises	Joseph Hibbard & Sons	do.
*DEALS, BATTENS, ETC.—Great Hall, Winchester House, Old Broad-street, E.C.	Churchill & Sims	March 25
*FREEHOLD ESTATE, NEW SOUTHGATE—At the Mart	Harman Bros.	March 27
*BUILDER'S PLANT, MACHINERY AND STOCK, WOOD-GREEN—On the Estate	Fuller, Horsey, Sons, & Cassell	March 31
*FREEHOLD, ETC., WATERSIDE PREMISES, LIMEHOUSE—At the Mart	Debenham, Tewson, Richardson, & Co.	do.
*FREEHOLD BUILDING SITE, CITY OF LONDON—At the Mart	Edwin Fox & Bousfield	April 1
*CONTRACTOR'S PLANT AND MACHINERY, PORTSMOUTH—On the Premises	Bowler & Blake	April 2
*FREEHOLD BUILDING SITE, ANGEL-COURT—At the Mart	Daniel Watney & Sons	April 3
*FREEHOLD BUILDING SITE, SMITHFIELD—At the Mart	Daniel Watney & Sons	do.
*BUILDING ESTATE, MAYFAIR, W.—At the Mart	Winkworth & Co.	April 8
*FREEHOLD ON BUILDING LEASE, CITY OF LONDON—At the Mart	Edwin Fox & Bousfield	do.
*FREEHOLD BUILDING ESTATES, SOUTHALL, W.—At the Mart	Ferris & Puckridge	April 10
*FREEHOLD ESTATE, PALMER'S-GREEN—At the Mart	Driver, Jonas, & Co.	May 4

PATENTS.—*Continued from page 318.*

compressed air to the discharge nozzle, the sand discharge from said nozzle being conveyed back to the sand reservoir by means of an apparatus comprising a suction-chamber which communicates on the one hand with the compressed-air supply, and on the other hand with a series of suction pipes opening directly into the sand reservoir.

4,530 of 1907.—S. O. COWPER-COLES: *Process for Making Cement from Blast-furnace Slag.*

This relates to a process for making cement from blast-furnace slag, consisting in breaking up the slag, mixing with it the requisite quantity of powdered chalk or lime, and then melting it in an electric furnace, from which the molten slag is allowed to drop on to a revolving disc whilst steam is simultaneously brought into contact with it.

10,221 of 1907.—W. BROOKE and BROOKES, LTD.: *Tile or Partition Brick.*

This relates to tiles constructed with vertical circular undercut or dovetail grooves within a projecting portion of the back surface of same, said grooves also tapering towards the outer edge of said file. Partitions or partition bricks are formed of such tiles placed back to back with the grooves or open spaces filled in with cement or the like.

20,552 of 1907.—M. HESSE: *Devices for Sucking Dust-containing Air.*

This relates to a device for sucking dust-containing air, and consists in the case which temporarily contains the air which is sucked into the same being formed by two more or less equal parts adapted to be taken apart. At one or on two opposite sides of the chamber within the casing there are arranged pointed bellows, which are connected by connecting rods or the like with a cranked shaft mounted in a suitable manner. The shaft is driven by hand or mechanically, whereby the bellows of the blower are operated and then suck in a current of air. Inside or outside the chamber of the casing, which can be taken to pieces, there is arranged a filter which serves for purifying the dust-containing air before the latter arrives in the blower. This filtering device consists of frames which are connected by hinges or by any other suitable means. These frames enclose a sheet-like filter of cotton-wool, felt, or the like in such a manner that the same cannot lose its connexion with the pieces of the frame on account of the air which is sucked in. The invention also consists in mounting the bearings for the shaft for actuating the bellows on the suction casing, or on a stationary part of the bellows instead of on the outer casing enclosing the latter, or on the frame or legs supporting the suction casing.

21,362 of 1907.—C. A. FLODQUIST: *Espagnolette Locking Devices for Windows, Doors, and Shutters, or the like.*

This relates to a spring espagnolette locking device for doors, windows, and shutters, characterised by the fact that one or more springs of suitable tension are mounted on the espagnolette rod journalled on a sash or a framepiece, or one of the sashes of windows having no post so that a spring or springs, as the rod is rotated for locking the window or the like, are forced against a stop or stops respectively on the framepiece, the sash, or the other sash respectively, in order that as uniform a pressure as possible of the sash against the framepiece or the other sash respectively may be effected.

10,790 of 1907.—D. J. K. BROWN and J. PATERSON: *Connexions for Lead and similar Piping.*

This relates to a connexion for lead and similar piping, consisting of a coupling-piece having a central portion of a hexagonal or similar form with externally-screwed ends terminating in conical projections, and adapted to receive cap or gland-like parts, within which are disposed and concealed coned rings for engaging the exterior of the lead or similar piping.

11,703 of 1907.—P. GROSSET: *Method for Fixing, Drilling, and Milling Tools in Shafts and Apparatus therefor.*

This relates to a method of fixing drilling and milling tools in their sockets, which consists in the parts of the tools which are to be pushed into the sockets being provided with flutings or corrugations and pressed into the smooth bores of the sockets, which bores are of smaller diameter than the tool whereby the material of the socket is forced into the flutings of the tool, and both parts combined into a rigid whole, and an apparatus for carrying out the method described, comprising two or more rolls uniformly moved forward which hold the tools inserted between them fast, and a rammer or pusher pushed forward at uniform intervals corresponding to the movement of the rolls by which rammer the sockets fed to the machine by hand or automatically are pressed on the tools.

12,964 of 1907.—E. C. KOOP: *Brick Presses.*

This relates to brick presses of the kind in which the mould is charged by means of a reciprocating slide cover actuated through the medium of an arm or projection, provided with a pin working in a grooves in a cam-drum, the charge being compressed within the mould, and finally ejected by means of a plunger or die actuated by two cams carried by a driven shaft, the moulded brick being subsequently pushed out of contact with the mould by the reciprocating slide, and consists in operating both the reciprocating slide cover and the plunger or die directly without the intervention of intermediate mechanism from a cam-drum and two cams all keyed upon the driving shaft of the press, and to enable the press to mould bricks of different thickness providing the plunger or die with a suitable packing and with an eccentric roller against which the lifting cam bears.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

March 9.—By GILBERT & HOW.

Stroud Green.—27, Albert-rd., u.t. 64 yrs., g.r. 6*l.* 6s., e.r. 42*l.* £350

By GEO. HEAD & CO.

Regent's Park.—6, Clarence-ter., u.t. 14¾ yrs., g.r. 30*l.*, y.r. 180*l.* 1,025

By JONES, LANG, & CO.

Camden Town.—262, Camden-road, u.t. 31 yrs., g.r. 6*l.*, p. 600

By TOWERS, ELLIS, & CO.

Paddington.—11, Chilworth-st., u.t. 30¾ yrs., g.r. 15*l.*, e.r. 80*l.* 400

March 10.—By FRANK JOLLY & JAMES.

Victoria Park.—14, Gore-rd., u.t. 45 yrs., g.r. 8*l.*, e.r. 48*l.* 330

Hackney.—189, Dalston-la., f., y.r. 50*l.* 1,040

By LOCKING & COULSON.

Islington.—96, Copenhagen-st., u.t. 35 yrs., g.r. 12*l.*, y.r. 40*l.* 210

By MAY, ELLIS, GRACE, & CO.

Brixton.—46, Mostyn-rd., u.t. 54¼ yrs., g.r. 6*l.* 10s., y.r. 52*l.* 325

Holloway.—52, 54, and 56, Cottenham-rd. (s.), u.t. 55 yrs., g.r. 21*l.*, y.r. 129*l.* 1,000

Haggerston.—9, Trafalgar-rd., u.t. 31 yrs., g.r. 4*l.*, w.r. 42*l.* 200

80, Haggerston-rd., u.t. 31 yrs., g.r. nil, y.r. 30*l.* 255

Islington.—80, Oakley-rd., u.t. 33 yrs., g.r. 7*l.* 7s., e.r. 60*l.* 465

By MADDISON, MILES, & MADDISON (at Great Yarmouth).

Great Yarmouth, Norfolk.—8, South-beach, Wellington Lodge, f., p. 820

9, St. Nicholas-ter.; 15 and 16, Row 78, South Howard-st., f., y.r. 29*l.* 347

22, Row 99, King-st.; 28, Row 31, George-st., f., y.r. 18*l.* 155

March 11.—By SAMUEL B. CLARK & SON.

Marylebone.—28, 29, and 30, Harley-mews North, u.t. 8 yrs., g.r. 16*l.*, y.r. 140*l.* 690

Regent's Park.—39, Chester-ter., u.t. 17 yrs., g.r. 52*l.* 10s., y.r. 150*l.* 710

4, 6, and 8, Osnaburgh-st., u.t. 40 yrs., g.r. 9*l.*, y.r. 300*l.* 3,500

By HAROLD GRIFFIN.

Battersea.—17, Palmerston-st., u.t. 54 yrs., g.r. 4*l.* 10s., w.r. 33*l.* 16s. 195

20 and 21, Russell-st., u.t. 53 yrs., g.r. 9*l.*, w.r. 78*l.* 405

Pimlico.—37, South Eaton-pl., u.t. 15 yrs., g.r. 3*l.*, y.r. 94*l.* 650

By RUSHWORTH & BROWN.

Caledonian-road.—123 to 129 (odd), Pembroke-st., u.t. 42 yrs., g.r. 26*l.*, w. and e.r. 161*l.* 4s. 800

New Barnet, Herts.—Victoria-rd., Moray House, f., y.r. 45*l.* 530

Clapham.—3, Gauden-rd., u.t. 54 yrs., g.r. 7*l.* 10s., y.r. 45*l.* 360

March 12.—By FAREBROTHER, ELLIS, & Co.

St. Giles.—17 and 18, Phœnix-st., u.t. 7 yrs., g.r. 140*l.*, y. and e.r. 451*l.* 10s. 300

By STIMSON & SONS.

Doddington, Essex.—Dagwood Farm, 32a. 1r. 25p., f. 730

Forest Hill.—Rosaleen-ter., f.g.r. 22*l.*, reversion in 98 yrs. 515

St. Germain's-rd., f.g.r. 8*l.*, reversion in 47 yrs. 195

Beckenham.—Blandford-rd., f.g.r. 18*l.*, reversion in 97 yrs. 455

Camberwell.—160 and 162, Coldharbour-la., u.t. 57 yrs., g.r. 10*l.*, y.r., 96*l.* 750

Stratford.—67, Gurney-rd., f., w.r. 32*l.* 14s. .. 310

Camberwell.—14, 16, 18, and 20 Avenue-rd., u.t. 34¼ yrs., g.r. 11*l.*, w.r. 144*l.* 6s. 630

Sydenham.—1 and 2, The Ferns, f., e.r. 100*l.*.. 760

Peckham.—13 and 15, Meeting House-la., u.t. 51 yrs., g.r. 6*l.* 10s., y. and e.r. 64*l.* 530

Brixton.—Coldharbour-la., f.g.r. 30*l.*, reversion in 86 yrs. 530

32, Vining-st., u.t. 58 yrs., g.r. 5*l.*, w.r. 31*l.* 8s. 200

WOODS & SNELLING.

City.—169 and 170, Aldersgate-st., u.t. 53¾ yrs., g.r. 320*l.*, y.r. 645*l.* 2,300

March 13.—SELFE & CO.

Barnsbury.—9 and 10, Grace-st., u.t. 33 yrs., g.r. 4*l.*, y.r. 64*l.* 470

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for office; s. for shops; ct. for court.

MEETINGS.

FRIDAY, MARCH 20.

Architectural Association.—Paper by Mr. H. Tanner, jun., entitled "Some Notes on Domestic Work of the Renaissance in England." 7.30 p.m.

Royal Institution.—Professor A. E. H. Love, M.A. D.Sc., on "The Figure and Constitution of the Earth." 9 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. J. D. W. Ball on "Stresses in Brick Arches." 8 p.m.

SATURDAY, MARCH 21.

Royal Institution.—Professor J. J. Thomson, M.A., D.Sc., on "Electric Discharges through Gases."—III. 3 p.m.

Architectural Association.—Visit to the Associated Portland Cement Manufacturers, Ltd., Works, Swanscombe-on-Thames. 9.30 a.m.

Institute of Sanitary Engineers.—Visit to Sewage Disposal Works of the Joint Drainage Scheme, Cowley, Middlesex.

Junior Institution of Engineers.—Reception at Caxton Hall, Westminster. 6.30 p.m.

Edinburgh Architectural Association.—Visit to (1) St. Peter's, Falcon-avenue (Church, Presbytery, Parish Room, and Sacristan's Quarters). (2) Private Chapel of the Archbishop of St. Andrews and Edinburgh, St. Bennet's, Greenhill-avenue.

MONDAY, MARCH 23.

University of London (South Kensington).—Mr. Banister Fletcher on "German Gothic Architecture." 8 p.m.

Royal Society of Arts (Cantor Lecture).—Professor Vivian B. Lewes on "Fuel and its Future."—Lecture III. 8 p.m.

TUESDAY, MARCH 24.

Royal Society of Arts (Colonial Section).—The Hon. C. H. Rason, Agent-General for Western Australia, on "The Mineral Resources of Western Australia." 4.30 p.m.

Institution of Civil Engineers.—(1) Mr. R. Richard Gales on "The Curzon Bridge, at Allahabad"; 2) Mr. A. Scott Napier on "The Netravati Bridge, at Mangalore." 8 p.m.

WEDNESDAY, MARCH 25.

Northern Architectural Association.—Annual meeting. 7.30 p.m.

Edinburgh Architectural Association.—Mr. F. Gordon Brown on "Dalmatia." Lantern slides. 8 p.m.

Architectural Association Discussion Section (at 1V., New-court, Lincoln's-inn, W.C.).—Mr. Archibald K. Nicholson on "Stained Glass." 7.30 p.m.

Royal Society of Arts.—Mr. A. S. Jennings on "Recent Improvements in Decorators' Materials." Sir William Emerson, Past-President R.I.B.A., will preside. 8 p.m.

Institution of Civil Engineers.—Students' visit to the works of the India Rubber, Gutta Percha, and Telegraph Works Company, Ltd., Silvertown, E.

THURSDAY, MARCH 26.

Royal Institution.—Mr. R. T. Glazebrook, M.A., D.Sc., on "Standardisation in Various Aspects—II. Electrical Engineering." 3 p.m.

London Institution.—Mr. F. Hovenden, F.L.S., F.G.S., on "A Study of the Principles of Nature."—IV. 5 p.m.

FRIDAY, MARCH 27.

Glasgow Architectural Craftsmen's Society.—Mr. A. W. R. Bell on "Good and Bad Practice in Buildings." 8 p.m.

Royal Institution.—The Hon. R. J. Strutt, M.A., F.R.S., on "Radio-active Change in the Earth." 9 p.m.

SATURDAY, MARCH 28.

Royal Institution.—Professor J. J. Thomson, M.A., on "Electric Discharges through Gases."—IV. 3 p.m.

TO CORRESPONDENTS.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 6 0	per 1000 alongside, in river.
Picked Stocks for Facings	2 10 0	,, delivered.
Flettons	1 5 0	,, at railway depôt.
Best Fareham Red	3 12 0	,, ,, ,,
Best Red Pressed Ruabon Facing	5 0 0	,, ,, ,,
Best Blue Pressed Staffordshire	3 15 0	,, ,, ,,
Do. Bullnose	4 0 0	,, ,, ,,
Best Stourbridge Fire Bricks	3 14 0	,, ,, ,,
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	9 0 0	,, ,, ,,
Headers	8 5 0	,, ,, ,,
Quoins, Bullnose, and Flats	12 10 0	,, ,, ,,
Double Stretchers	14 15 0	,, ,, ,,
Double Headers	12 10 0	,, ,, ,,
One Side and two Ends	14 15 0	,, ,, ,,
Two Sides and one End	15 10 0	,, ,, ,,
Splays, Chamferred, Squints	15 10 0	,, ,, ,,
Best Dipped Salt Glazed Stretchers	9 0 0	,, ,, ,,
Headers	8 5 0	,, ,, ,,
Quoins, Bullnose, and Flats	12 10 0	,, ,, ,,

BRICKS, &c. (*continued*).

	£ s. d.	
Double Stretchers	14 15 0	per 1000, deld. rly. dpôt.
Double Headers	12 10 0	,, ,, ,,
One Side and two Ends	14 15 0	,, ,, ,,
Two Sides and one End	15 10 0	,, ,, ,,
Splays, Chamferred, Squints	15 10 0	,, ,, ,,
Second Quality White and Dipped Salt Glazed	1 5 0	,, less than best.

	s. d.	
Thames and Pit Sand	6 6	per yard, delivered.
Thames Ballast	5 0	,, ,,
Best Portland Cement	28 0	per ton, ,,
Best Ground Blue Lias Lime	19 0	,, ,,

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 6d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	,, ,,
PORTLAND STONE (20 ft. average)—		
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	,, ,,
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	,, ,,

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer ,,	1 6	,, ,,
Greenshill ,,	1 10	,, ,,
Darley Dale in blocks	2 4	,, ,,
Red Corsehill ,,	2 2	,, ,,
Closeburn Red Freestone	2 0	,, ,,
Red Mansfield ,,	2 4	,, ,,

YORK STONE—*Robin Hood Quality.*

	s. d.	
Scappled random blocks	2 10	,, ,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super., ,,
6 in. rubbed two sides ditto, ditto	2 6	,, ,,
3 in. sawn two sides slabs (random sizes)	0 11½	per ft. cube, ,,
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	,, ,,
1½ in. to 2 in. ditto, ditto	0 6	,, ,,

HARD YORK—

Scappled random blocks	3 0	,, ,,
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super. ,,
6 in. rubbed two sides ditto	3 0	,, ,,
3 in. sawn two sides slabs (random sizes)	1 2	,, ,,
2 in. self-faced random flags	0 5	,, ,,

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 s. r. d.
20×12 ,, ,,	13 17 6	,, ,,
20×10 first quality,,	13 0 0	,, ,,
20×12 ,, ,,	13 15 0	,, ,,
16×8 ,, ,,	7 5 0	,, ,,
20×10 best blue Portmadoc	12 12 6	,, ,,
16×8 ,, ,,	6 12 6	,, ,,
20×10 best Eureka unfading green	15 17 6	,, ,,
20×12 ,, ,,	18 7 6	,, ,,
18×10 ,, ,,	13 5 0	,, ,,
16×8 ,, ,,	10 5 0	,, ,,
20×10 permanent green	11 12 6	,, ,,
18×10 ,, ,,	9 12 6	,, ,,
16×8 ,, ,,	6 12 6	,, ,,

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. ,,
Best Broseley tiles	50 0	per 1000 ,,
Do. Ornamental tiles	52 6	,, ,,
Hip and Valley tiles	4 0	per doz. ,,
Best Ruabon red, brown, or brindled do. (Edward's)	57 6	per 1000 ,,
Do. Ornamental do.	60 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 0	,, ,,
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 ,,
Do. Ornamental do.	54 6	,, ,,
Hip tiles	4 1	per doz. ,,
Valley tiles	3 8	,, ,,
Best "Rosemary" brand plain tiles	48 0	per 1000 ,,
Best Ornamental tiles	50 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 8	,, ,,
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 ,,
Do. pressed	47 6	,, ,,
Do. Ornamental do.	50 0	,, ,,
Hip tiles	4 0	per doz. ,,
Valley tiles	3 6	,, ,,

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 13 0 0

WOOD (*continued*).

	At per standard. £ s. d.			£ s. d.
BUILDING WOOD (*continued*)—				
Battens: best 2½ by 6 and 3 by 6...	0 10 0	less than 7 in. and 8 in.		
Deals: seconds.....	1 0 0	less thn best.		
Battens: seconds.....	0 10 0	"	"	
2 in. by 4 in. and 2 in. by 6 in....	9 0 0	...	10 0 0	
2 in. by 4½ in. and 2 in. by 5 in ..	8 10 0	...	9 10 0	
Foreign Sawn Boards—				
1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.		
¾ in.	1 0 0	"		
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	...	5 0 0	
Seconds	4 0 0	...	4 10 0	
Small timber (8 in. to 10 in.) ...	3 12 6	...	3 15 0	
Small timber (6 in. to 8 in.).....	3 0 0	...	3 10 0	
Swedish balks	2 10 0	...	3 0 0	
Pitch-pine timber (30 ft. average)	4 0 0	...	4 15 0	
JOINERS' WOOD.	At per standard.			
White Sea: first yellow deals, 3 in. by 11 in.....	24 0 0	...	25 0 0	
3 in. by 9 in.	22 0 0	...	23 0 0	
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	...	18 0 0	
Second yellow deals, 3 in. by 1 in.	18 10 0	...	20 0 0	
" " 3 in. by 9 in.	17 10 0	...	19 0 0	
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	...	14 10 0	
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	...	15 0 0	
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	...	12 0 0	
Petersburg first yellow deals, 3 in. by 11 in.....	21 0 0	...	22 10 0	
Do. 3 in. by 9 in.	18 0 0	...	19 10 0	
Battens	13 10 0	...	15 0 0	
Second yellow deals, 3in. by 11in.	16 0 0	...	17 0 0	
Do. 3 in. by 9 in.	14 10 0	...	16 0 0	
Battens	11 0 0	...	12 10 0	
Third yellow deals, 3 in. by 11 in.	13 0 0	...	14 0 0	
Do. 3 in. by 9 in.....	12 10 0	...	14 0 0	
Battens	10 0 0	...	11 0 0	
White Sea and Petersburg—				
First white deals, 3 in. by 11 in.	14 10 0	...	15 10 0	
" " 3 in. by 9 in.	13 10 0	...	14 10 0	
Battens.....	11 0 0	...	12 0 0	
Second white deals, 3in. by 11 in.	13 10 0	...	14 10 0	
" " 3 in. by 9 in.	12 10 0	...	13 10 0	
" " battens	10 0 0	...	11 0 0	
Pitch-pine: deals.....	18 0 0	...	21 0 0	
Under 2 in. thick extra	0 10 0	...	1 0 0	
Yellow pine—First, regular sizes	44 0 0	upwards.		
Oddments	32 0 0	"		
Seconds, regular sizes	33 0 0	"		
Yellow Pine oddments	28 0 0	"		
Kauri Pine—Planks, per ft. cube..	0 3 6	...	0 5 0	
Danzig and Stettin Oak Logs—				
Large, per ft. cube	0 3 0	...	0 3 6	
Small " "	0 2 6	...	0 2 9	
Wainscot Oak Logs, per ft. cube..	0 5 6	...	0 6 0	
Dry Wainscot Oak, per ft. sup. as inch	0 0 8½	...	0 0 9½	
¾ in. do. do.	0 0 7	...	—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch...	0 0 9	...	0 1 0	
Selected, Figury, per ft. super. as inch	0 1 6	...	0 2 6	
Dry Walnut, American, per ft. super. as inch	0 0 10	...	0 1 0	
Teak, per load	17 0 0	...	22 0 0	
American Whitewood Planks, per ft. cube.....	0 4 0	...	0 5 0	
Prepared Flooring, etc.—	Per square.			
1 in. by 7 in. yellow, planed and shot	0 13 6	...	0 17 0	
1 in. by 7 in. yellow, planed and matched	0 14 0	...	0 18 0	
1¼ in. by 7 in. yellow, planed and matched	0 16 0	...	1 0 0	
1 in. by 7 in. white, planed and shot	0 12 0	...	0 14 6	
1 in. by 7 in. white, planed and matched	0 12 6	...	0 15 0	
1¼ in. by 7 in. white, planed and matched	0 15 0	...	0 16 6	
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0	...	0 13 6	
1 in. by 7 in. " "	0 14 0	...	0 18 0	
¾ in. by 7 in. white " "	0 10 0	...	0 11 6	
1 in. by 7 in. " "	0 12 9	...	0 15 0	

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	7 0 0	...	7 10 0
Compound Girders, ordinary sections	9 0 0	...	10 0 0
Steel Compound Stanchions	11 0 0	...	12 0 0
Angles, Tees, and Channels, ordinary sections	9 0 0	...	10 0 0
Flitch Plates	9 0 0	...	9 10 0
Cast Iron Columns and Stanchions including ordinary patterns.....	7 10 0	...	8 10 0

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	8 10 0	...	9 0 0
Staffordshire Crown Bars, good merchant quality	8 15 0	...	9 5 0
Staffordshire "Marked Bars" ...	10 10 0	...	—
Mild Steel Bars	8 15 0	...	9 5 0
Hoop Iron, basis price	9 5 0	...	9 10 0
" " Galvanised	17 0 0	...	—
(*And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	9 15 0	...	—
" " 24 g.	10 15 0	...	—
" " 26 g.	12 5 0	...	—
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.....	15 0 0	...	—
Ordinary sizes to 22 g. and 24 g.	15 10 0	...	—
" " 26 g.	16 10 0	...	—

METALS (*continued*).

	Per ton, in London. £ s. d.		£ s. d.
IRON (*continued*)—			
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	18 0 0	...	—
" " 22 g. and 24 g.	18 10 0	...	—
" " 26 g.	20 0 0	...	—
Galvanised Corrugated Sheets—			
Ordinary sizes, 6 ft. to 8 ft. 20 g.	14 10 0	...	—
" " 22 g. and 24 g.	14 15 0	...	—
" " 26 g.	16 5 0	...	—
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	12 0 0	...	—
Best Soft Steel Sheets, 22 g. & 24 g.	13 0 0	...	—
" " " 26 g.	15 0 0	...	—
Cut Nails, 3 in. to 6 in.	10 10 0	...	11 0 0
(Under 3 in., usual trade extras.)			

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up.	16 15 0	...	—
Pipe in coils	17 5 0	...	—
Soil pipe	19 15 0	...	—
Compo pipe.....	20 15 0	...	—
ZINC—sheet—			
Vieille Montague .....ton	23 10 0	...	—
Silesian.....	28 5 0	...	—
COPPER—			
Strong Sheet.....per lb.	0 1 1	...	—
Thin " ..... "	0 1 2	...	—
Copper nails ..... "	0 0 11	...	—
Copper wire ..... "	0 0 10	...	—
BRASS—			
Strong Sheet..... "	0 1 0	...	—
Thin..... "	0 1 1	...	—
TIN—English Ingots..... "	0 1 4	...	—
SOLDER—Plumbers' ..... "	0 0 7	...	—
Tinmen's ..... "	0 0 9	...	—
Blowpipe ..... "	0 0 11	...	—

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.

15 oz. thirds.....	2½d. per ft. delivered.
" fourths.....	1⅝d. " "
21 oz. thirds	3½d. " "
" fourths.....	2¾d. " "
26 oz. thirds	4¼d. " "
" fourths	3½d. " "
32 oz. thirds	5d. " "
" fourths.....	4¼d. " "
Fluted Sheet, 15 oz.....	3¼d. " "
" 21 oz.	4¼d. " "

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.

⅛ Hartley's	2¼d. per ft. delivered.
3/16 "	2¾d. " "
¼ "	2⅝d. " "
Figured and Oxford Rolled "Oceanic" Glass, white	4d. " "
Do. " tinted ...	5¼d. " "

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 2 1
" " " in barrels	"	0 2 2
" " " in drums	"	0 2 4
Boiled " " in pipes	"	0 2 3
" " " in barrels	"	0 2 4
" " " in drums	"	0 2 6
Turpentine in barrels	"	0 3 2
" in drums	"	0 3 4
Genuine Ground English White Lea	per ton	22 10 0
Red Lead, Dry	"	22 0 0
Best Linseed Oil Putty	per cwt.	0 7 0
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak.....	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak.....	0 10 0
Superfine Hard-drying Oak, for seats of Churches.....	0 14 6
Fine Elastic Carriage	0 12 0
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 0
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel.....	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size.....	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain.....	0 9 0
Brunswick Black	0 8 0
Berlin Black	0 16 0
Knotting	0 10 9
French and Brush Polish.....	0 10 6

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l*., unless in some exceptional cases and for special reasons.]

***Denotes *accepted*. † Denotes *provisionally accepted*.**

BARKINGSIDE.—For laying a 9-in sewer along Fencepiece-road, for Ilford Urban District Council. Mr. H. Shaw, Surveyor to the Council, Town Hall, Ilford:—
B. W. Glenny, Romford* £563 8

BRASTED.—For sewerage works, for the Sevenoaks Rural District Council. Mr. T. Hennell, Engineer, Parliament-mansions, Victoria-street, Westminster, S.W.
F. Osenton, Hampton-on-Thames* £478 3 6
[Sixteen tenders from £455 to £944.]

CAERGWRLE (Wales).—For additions and alterations to a shop and house. Mr. J. Harris, C.E., architect, Westminster-buildings, Wrexham:—
Pugh & Davies, builders, Caergwrle* £436

CARDIFF.—For roads and sewers, for the Heath Estate, Cardiff. Messrs. Veall & Sant, architects, 5, Arcade-chambers, High-street, Cardiff:—

R. W. Hunter	£2,891	E. H. Page.....	£1,828
J. Brock.....	2,825	J. Rees	1,767
J. Strachan	2,708	G. Rutter	1,694
A. Sims	2,517	T. R. Williams....	1,681
C. Sayers	2,509	Barnes & Chaplin, Cardiff†	1,633
J. E. Evans	2,289		
G. L. Morgan.....	2,221		

GUILDFORD.—For erecting a porter's lodge, a receiving block, and a small stable building, etc., at the Union Workhouse, Guildford, for the Guardians. Mr. E. L. Lunn, architect, 36, High-street, Guildford:—
Mitchell Bros, Shalford, Surrey*..... £2,675

HANLEY.—For erecting new office premises. Messrs. Elijah Jones & Jackson, architects, Hanley:—

Colley & Lindop ..	£1,308	J. Beech.....	£1,172
H. Leonard	1,240	G. M. Sambrook ..	1,156
J. Gallimore	1,210	Ed. Roberts	1,140
J. Cooke.....	1,200	T. Goodwin	1,136
G. Ellis	1,195	C. Cornes & Sons, Hanley*.....	1,129
W. Thomas & Son	1,174		

HANWELL.—For additions and alterations to foul laundry at the Hanwell Asylum, for the London County Council:—
Messrs. Thos. Bradford & Co., of High Holborn, to fit up two drying-rooms and an airing-chamber, £202 15s.

HEATH TOWN.—For 200 yds. of 9-in. sewer in Bushbury-road, for the Urban District Council. Messrs. Berrington, Son, & Martin, Engineers, Bank Buildings, Wolverhampton:—

H. Holloway.....	£102	J. Owens, St. Mark's-road, Wolverhampton*	£97
W. H. Reading.....	97		

HIGHLEY.—For works at Highley Council School, for Salop County Council Elementary Education Department. Messrs. Gething & Son, architects, Oxford-chambers, Kidderminster:—
Drainage, Extension of Playgrounds.
W. Cooper, Blackheath £499
Water Supply.
W. Cooper, Blackheath 124
Painting, etc.
J. P. Ellams, Highley 65

HUTTON-LE-HOLE.—For erecting a country house, for Mr. W. Harvey, Leeds. Messrs. Ridgway & De Bock Porter, architects and surveyors, Malton. Quantities by architects:—
G. Mansfield & Son, York* £1,698

ILFORD.—For laying surface-water drains on the Cranbrook Park and Ilford Park estates, for the Urban District Council. Mr. H. Shaw, Surveyor, Town Hall, Ilford:—
H. W. Taylor, Chadwell Heath* ..... £693 15 7 Ilford Park. / £275 6 2 Cranbrook Park.

KING'S LYNN.—For the construction of a timber quay at South Quay, for the Conservancy Board. Mr. E. J. Silcock, M.Inst.C.E., Sanctuary House, Westminster, S.W.:—

Campbell & Handman.....	£770 0 0
A. E. Jenkinson	650 0 0
J. J. Bone.....	625 0 0
Dewsberry & Son.....	598 0 0
Yorkshire Hennebique Contracting Co., Ltd.....	592 7 3
J. Sangwin, Hull*.....	444 17 5

BRISTOL.—For alterations to the Old Dutch House at the Junction of Wine-street and High-street, for the New Streets Committee. Mr. W. S. Skinner, F.R.I.B.A., Edinburgh Chambers, 16, Baldwin-street, Bristol. Quantities by architect:—

—	General Works. £ s. d.	Extra for White Wood. £ s. d.	Exterior Painting. £ s. d.	Total. £ s. d.
Clark & Sons	3,500 0 0	101 0 0	15 15 0	3,616 15 0
Merrick & Son	3,310 0 0	110 0 0	35 0 0	3,455 0 0
Cowlin & Son	3,175 0 0	125 0 0	25 0 0	3,325 0 0
F. Chown	3,093 0 0	200 0 0	22 0 0	3,315 0 0
Wilcock & Co.....	3,100 0 0	41 6 0	15 0 0	3,156 6 0
Stephens & Bastow	2,995 0 0	150 0 0	5 0 0	3,150 0 0
J. Browning	3,502 0 0	55 0 0	22 0 0	3,129 0 0
R. F. Ridd	2,909 0 0	175 0 0	16 0 0	3,100 0 0
Humphreys & Son.....	2,870 0 0	140 0 0	15 0 0	3,025 0 0
Wilkins & Son	2,809 0 0	68 0 0	7 0 0	2,884 0 0
Perkins & Sons	2,545 0 0	225 0 0	15 0 0	2,785 0 0
Forse & Son	2,595 0 0	110 0 0	9 0 0	2,714 0 0
S. Roberts, Ltd.....	2,395 0 0	188 0 0	12 0 0	2,595 0 0
A. J. Colborne, County-road, Swindon*	2,299 10 0	110 0 0	6 10 0	2,416 0 0

[Architect's estimate, £2,750.]

KIRKBY-IN-ASHFIELD.—For sinking well and driving headings, waterworks extensions. Messrs. Elliott & Brown, civil engineers, Burton Buildings, Parliament-street, Nottingham :—

—	Well and 137 yds.	Extra 100 yds.	Second extra 100 yds.	Time to completion.
	£ s. d.	£ s. d.	£ s. d.	Weeks.
C. Chamberlain	2,125 0 0	922 10 0	973 15 0	135
W. I. Knox	2,116 0 0	871 5 0	973 15 0	144
J. Tilley & Sons, Ltd.	2,146 0 5	820 0 0	871 5 0	65
J. Sangwin	1,948 4 3	793 17 6	807 3 9	99
C. Williamson	1,595 0 0	695 0 0	755 0 0	—
Fretwell, Bowman, & Clark	1,813 6 6	563 15 0	615 0 0	74½
H. Ashley	1,485 16 4	589 7 10	691 17 0	72
W. Rollinson & Sons	1,664 2 0	499 13 0	499 13 9	105
W. Crossland	1,838 8 1	394 12 6	410 0 0	52
A. E. Nunn, Finsbury House, Blomfield-street, London, E.C.*	1,527 14 2	512 10 0	537 12 6	72
Lane Bros.	1,620 10 0	435 12 6	461 5 0	165
R. Carr	1,370 0 0	380 0 0	360 0 0	220

LEATHERHEAD.—For the construction of a mortuary, for the Urban District Council. Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead :—

W. H. Brown	£128	H. Skilton, Leatherhead‡	£116
Cropley & Son	119	W. Childs	115

[Surveyor's estimate, £100.]
‡Accepted subject to a deduction of £3 for slates.

LEATHERHEAD.—For making up St. John's-avenue, for the Urban District Council. Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead :—

Potter & Co.	£400 0 0	T. W. Pedrette	£334 16 10
Kavanagh & Co.	371 12 6	H. M. Blaker	323 17 6
Streeter & Co.	364 10 10	J. May, Ashtead, Surrey*	312 0 0
R. W. Swaker	358 0 0		
James & Co.	356 11 9		

[Surveyor's estimate, £300.]

LEATHERHEAD.—For subsidiary sewers and drains, High-street, North-street, and Bridge-street, for the Urban District Council. Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead :—

Kavanagh & Co.	£345 18 9	R. W. Swaker	£262 0 0
Potter & Co.	335 9 6	Streeter & Co.	258 17 3
T. W. Pedrette	319 2 0	J. May	258 0 0
James & Co.	301 17 0	H. M. Blaker, Leatherhead*	247 7 10
W. H. Brown	297 17 6		

[Surveyor's estimate, £262.]

LEATHERHEAD.—For 250 yds. lineal of 9-in. stoneware pipe-sewer, Oxshott-road, for the Urban District Council. Mr. J. E. Smales, Surveyor, Council Offices, Leatherhead :—

T. W. Pedrette	£443 0 4	J. May	£293 0 0
Streeter & Co.	426 12 0	R. W. Swaker	275 0 0
Potter & Co.	414 0 0	H. M. Blaker, Leatherhead*	225 2 0
Kavanagh & Co.	379 11 6		
James & Co.	312 6 8		

[Surveyor's estimate, £300.]

LONDON.—Year's contract for the Bermondsey Borough Council :—
Brunswick Rock Asphalt Paving Co., for mastic asphalt, at 3s. 6d. for 1 in. for over 100 sq. ft., and 4s. for 1 in. for under 100 sq. ft.; and at 5s. for 1½ in. over 100 sq. ft., and 5s. 9d. for 1½ in. for under 100 sq. ft.
French Asphalt Co., for compressed asphalt, at 4s. 6d. for 1 in. over 100 sq. ft., and 5s. for under 100 sq. ft. and at 6s. and 6s. 6d. respectively for 1½ in.

LONDON.—For special trackwork, Brixton-road to Camberwell-green tramways, for the London County Council :—

E. Allen & Co., Ltd.	£888 10 0
Lorain Steel Co., Ohio, U.S.A.	833 10 0
Hadfield's Steel Foundry Co., Ltd., Sheffield*	838 12 6

[The Chief Engineer's estimate, comparable with the tenders, is £810.]

LONDON.—For overhead travelling crane, Hammersmith sub-station, for the London County Council :—

T. Larmuth & Co.	£210 0
Carrick & Ritchie	201 0
J. Smith (Keighley), Ltd., Keighley*	159 10

[The estimate of the Chief-officer of Tramways, comparable with the tenders, is £200.]

LONDON.—Supply of Portland cement to Bermondsey Borough Council :—

—	Delivered any part of Borough.	Delivered alongside Wharf.	Charge for Sacks not Returned.
	Per ton.	Per ton.	Each.
	£ s. d.	£ s. d.	s. d.
Abbey, Rose, & Co.	1 3 2	1 1 11	1 0
Broad & Co., Ltd.*	*1 3 2	*1 1 3	*1 0
E. R. Burtt & Sons	1 4 6	1 2 4	0 8
Coles, Shadbolt, & Co., Ltd.	1 6 6	1 5 0	0 8
Eastwood & Co., Ltd.	1 4 6	1 2 9	0 7
Formby's Cement Works Co., Ltd.	1 5 11	1 2 11	—
E. J. & W. Goldsmith	—	1 3 9	0 7
Hall & Co. (Croydon), Ltd.	1 4 0	1 1 3	0 8
Smeed, Dean, & Co., Ltd.	—	1 3 3	0 6
Sussex Portland Cement Co., Ltd.	1 4 6	—	0 8
Trenchmann, Weeks, & Co., Ltd.	1 7 6	1 3 0	—
Wakeley Bros. & Co., Ltd.	1 3 5	1 1 4	0 8
W. Whiteway & Co.	1 6 0	1 2 0	—
J. Williams & Co.	1 4 9	1 2 3	1 0
Wouldham Cement Co., Ltd.	‡1 9 0 / §1 6 9	1 4 3	0 8
Young & Son	1 5 5	1 1 10	—

‡ In 5-ton lots. § In 60-ton lots.

LONDON.—Annual contracts for lime, cement, etc., for the St. Marylebone Borough Council :—
Broad & Co., Paddington (four items), for lime and bricks.
H. Sabey & Co., Fletton bricks, at 24s. 6d. per 1,000.
Martin Earle, & Co., 139, Queen Victoria-street, for portland cement, at 25s. 6d. per ton.

LONDON.—Annual contracts for ballast, flints, etc., for the St. Marylebone Borough Council :—
A. & F. Manuelle, 57, Gracechurch-street, for broken Guernsey stone, at 8s. 7d. to 14s. 11d. per cub. yd.
J. Shelbourne & Co., 70, Fenchurch-street, for Kentish flints, at 5s. 10d. per cub. yd.
W. Boyer & Sons, Paddington, for pit ballast and shingle.
W. Skitt, Ware, for sand and shingle.
H. Sabey & Co., Paddington, for hoggin, brick rubbish, etc.
H. Sabey & Co., H. Covington & Sons, Thames Sand Dredging Co., and Shelbourne & Co., for Thames ballast.

LONDON.—Contracts for materials for street works, for the St. Marylebone Borough Council :—
Improved Wood Pavement Co., for wood blocks for repairs, at 8*l.* 11s. 9d. to 8*l.* 1s. 6d. per 1000.
W. Griffiths & Co., for Norway kerb, at 1s. 8d. to 2s. 2d. per ft.
Brookes, Ltd., for Norway pitching, at 24s. to 35s. 6d. per ton.
S. Marshall & Sons, Halifax, for Yorkshire paving, at 5s. 1d. to 7s. 6d. per yd.
J. Ellis & Sons, Leicester, for artificial paving, at 5s. 7d. per yd.
Hard York Nonslip Co., Halifax, for artificial paving, at 5s. 6d. and 5s. 8d. per yd.
Aylesford Sand and Stone Quarries, Ltd., Rochester, for tar-paving (Kentish rag), at 17s. to 18s. 8d. per cub. yd.
J. Smart, for Derbyshire spar, at 16s. 6d. and 19s. per yd.

LONDON.—For making up the roadway in Ingle thorpe-street, for the Fulham Borough Council :—

J. Mears	£648	Atkins & Co., Queen Elizabeth-road, Kingston-on-Thames*	£580
J. & W. Drake	631		
J. Mowlem & Co.	620		

LONDON.—Contracts for one year of hardwood paving blocks for the Bermondsey Borough Council :—

—	Jarrah.		
	9×5×3	9×4½×3	9×4×3
	£ s. d.	£ s. d.	£ s. d.
Acme Flooring & Paving Co. (1904), Ltd.	12 10 0	11 5 6	10 1 6
W. Griffiths & Co., Ltd.	12 4 6*	11 2 6	10 0 0
Improved Wood Pavement Co., Ltd.	12 13 0	11 9 0	10 5 0
Millar's Karri & Jarrah Co. (1902), Ltd.	12 5 6	11 1 3*	9 17 6*
Timber Corporation, Ltd.	12 8 6	11 5 0	10 1 6

LONDON.—Annual contracts for supply of ballast and granite, for the Camberwell Borough Council :—
H. Prentis, for Croydon flints, at 6s. 9d. per cub. yd.; for Croydon flints, at 6s. 9d. per cub. yd.
J. & B. Martin for flints (best Kent), at 5s. 6d. per cub. yd.; for flints (best Kent), at 5s. 6d. per cub. yd.
Eastwood & Co., Ltd., for clean, grey Kent dug flints, at 4s. per cub. yd.
The Associated Portland Cement Manufacturers (1900), Ltd., for clean, red gravel hoggin, at 2s. 7d. per cub. yd.
J. & B. Martin, for clean red gravel hoggin, at 4s. 3d. per cub. yd.
Chittenden & Simmons, Ltd., for best screened blue Kentish ragstone, at 7s. per cub. yd.; for best screened blue Kentish ragstone, at 8s. 9d. per ton.
W. R. Cunis, Ltd., for clean Thames ballast, at 3s. 4½d. per cub. yd.
W. G. Penfold, for clean Thames ballast, at 5s. per cub. yd.
H. Prentis, for hardcore, at 2s. per cub. yd.; for burnt ballast, at 4s. 6d. per cub. yd.
C. H. Norris, Ltd., for washed, crushed, and screened ballast, ¾ in., at 4s. 11d. per cub. yd.
H. Prentis, for bright Croydon gravel, at 9s. per cub. yd.
The Aylesford Sand and Stone Quarries Co., Ltd., for clean, sharp Thames sand, at 5s. 6d. per cub. yd.
J. & B. Martin, for sharp, sifted pit sand, at 4s. 5d. per cub. yd.
Aylesford Sand & Stone Quarries Co., for sharp, sifted pit sand, at 3s. 3d. per cub. yd.
W. G. Penfold, for clean sea sand at 6s. 6d. per cub. yd.
A. & F. Manuelle, J. Hall, W. Griffiths & Co., and Fry Bros.

LONDON.—Annual contracts for paving materials, etc., for the Camberwell Borough Council :—
J. Brooke & Sons, for white York paving, 2½ in., at 7¾d. per ft. super.
A. & F. Manuelle, for Norway straight kerb, 12 in. by 6 in., at 1s. 4¾d. per ft. run; for Norway circular kerb, 12 in. by 6 in., at 1s. 8¾d. per ft. run; for Norway straight kerb, 6 in. by 12 in., edge, at 1s. 4¾d. per ft. run; for Norway circular kerb, 6 in. by 12 in., edge, at 1s. 8¾d. per ft. run; for Norway straight kerb, 12 in. by 8 in., flat, at 1s. 7¾d. per ft. run; for Norway circular kerb, 12 in. by 8 in., flat, at 1s. 11¾d. per ft. run; for Norway straight kerb, 8 in. by 12 in., edge, at 1s. 7¾d. per ft. run; for Norway circular kerb, 8 in. by 12 in., edge, at 1s. 11¾d. per ft. run; for Norway block channel, 9 in. by 6 in., at 1s. 2¾d. per ft. run for Norway block circular channel, 9 in. by 6 in., at 1s. 6¾d. per ft. run; for Norway block channel, 12 in. by 6 in., at 1s. 4¾d. per ft. run; for Norway block circular channel, 12 in. by 6 in., at 1s. 8¾d. per ft. run.
A. C. W. Hobman & Co., for best Derbyshire spar, at £1 5s. per ton; mastic asphalt blocks, at £3 per ton.

LONDON.—For new packing and receiving rooms to the laundry at North-Western Fever Hospital, Hampstead, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

Johnson & Co.	£740 0
Stevens & Sons	710 0
P. Wilson	697 10
W. Reason	697 0
T. Bendon, Ltd.	671 0
E. J. Price, 50, Lessar-avenue, Clapham Common*	440 0

LONDON.—Annual tenders for lime, cement, plaster, etc., for the Camberwell Borough Council :—
Abbey, Rose, & Co., for fresh-burnt grey Dorking lime, at 8s. 9d. per cub. yd.
Young & Son, for best blue lias lime (lump), at 16s. 6d. per ton; (ground), at 17s. 6d. per ton.
Abbey, Rose, & Co., for best Portland cement, at £1 3s. 5d. per ton; for chalk lime, at 8s. 9d. per cub. yd.; for Stourbridge fire clay, at 1s. 3d. per bushel; for Stourbridge fire bricks, at 6s. 11d. per hundred: for cow hair, at 6s. per cwt.; for plaster (fine), at 1s. 9d. per cwt.; for plaster (coarse), at 1s. 3d. per cwt.; for laths (fir, best rent, single), at 10½d. per bundle; for laths (fir, best rent, lath and half), at 1s. 4d. per bundle; for coke breeze, at 5s. per cub. yd.

LONDON.—For tender for asphalt and tar paving works, for the Camberwell Borough Council :—
A. C. W. Hobman & Co., for new tar-paving, at 2s. 1d. per yd. super.; for tar-paving repairs, at 2s. 1d. per yd. super.; for new asphalt paving (footways), at 3s. 4d. per yd. super.; for new asphalt paving (trenches), at 4s. 4d. per yd. super.; for new asphalt paving (crossings), at 5s. 9d. per yd. super.; for new asphalt paving (crossings in trenches), at 6s. 9d. per yd. super.

LONDON.—Contract for lime, for the Bermondsey Borough Council :—

—	Grey Stone. Per ton.	Ground Blue Lias. Per ton.
	£ s. d.	£ s. d.
Abbey Rose & Co.*	0 17 4	0 17 4
Broad & Co., Ltd.	0 18 0	0 18 6
E. R. Burtt & Son	0 18 9	0 16 9
Eastwood & Co., Ltd.	1 0 0	0 17 6
Formby's Cement Works Co., Ltd.	0 18 0	0 19 6
Hall & Co. (Croydon), Ltd.	0 18 4	0 18 5
J. S. Peters	0 18 0	—
Wakeley Bros. & Co., Ltd.	0 17 6	0 18 0
Wm. Whiteway & Co.	1 0 0	0 19 6
J. Williams & Co.	1 1 0	1 0 0
Young & Son	0 19 11	0 17 0

LONDON.—Year's contracts for granite, ballast, hoggin, and sand, for the Bermondsey Borough Council :—
A. & F. Manuelle, for broken Guernsey granite, at prices ranging from 10s. 4d. to 11s. 5d., for 2 in.; at 10s. 10d. to 11s. 11d., for 1½ in.; and at 7s. 1d. to 8s. 3d. for ½ in., delivered at depots and elsewhere; Brookes, Ltd., at from 10s. 3d. to 11s. 9d., for 2 in.; from 10s. 6d. to 12s., for 1½ in.; and from 7s. 6d. to 9s., for ½ in., delivered at wharves.
T. Scholey & Co., for unscreened sand and ballast, at prices ranging from 2s. 4d. to 3s. 5d. per yd., according to place of delivery.
S. West, Ltd., for screened crushed ballast and hoggin, at from 2s. 6d. to 4s. 5d. per yd., according to place of delivery.
A. & F. Manuelle, for granite pitchings, at £1 7s. 6d. to £1 12s. 9d. per ton; Brookes, Ltd., at from £1 9s. to £1 11s. 3d. per ton; H. J. Cooper & Co., at £1 6s. 6d. to £1 7s. 6d. per ton; J. Mowlem & Co., at £1 4s. to £1 5s. 6d. per ton.

LONDON.—Annual contracts for bricks and drain pipes, for the Bermondsey Borough Council :—
Wakeley Bros. & Co., for hard Fletton first-quality bricks, at from 25s. 3d. to 27s. 3d. per 1,000 according to place of delivery.
W. Whitemay & Co., for fire bricks, blue Staffordshire bricks, at from 8s. 6d. to £1 18s. per 1,000 less 2½ per cent.
Doulton & Co., for straight and bent pipes, etc., at various prices for separate items.

LONDON.—Rubber cable, for the Stepney Borough Council :—

The India Rubber, Gutta Percha, and Telegraph Works Co., Ltd.	£153 10 9
T. A. Glover & Co., Ltd.	149 14 2
W. T. Henley's Telegraph Works Co., Ltd.	149 14 0
Baxter & Caunter, 86, Charing Cross-road*	122 13 6

LONDON.—Annual contracts for Guernsey granite, kerb, and tram, for the Bermondsey Borough Council:—
W. Griffiths & Co., Ltd., for straight kerb, 6 in. by 12 in., at 1s. 3d. to 1s. 4½d. per ft.; circular kerb, 6 in. by 12 in., at 1s. 5d. to 1s. 6½d. per ft.; for tram, 12 in. by 6 in., at 1s. 7½d. to 1s. 9d. per ft.
A. & F. Manuelle, for straight kerb, 6 in. by 12 in., at 1s. 2¾d. to 1s. 3¾d. per ft.; for circular kerb (under 6 ft. radius), 6 in. by 12 in., at 2s. 1d. to 2s. 2d. per ft.; for circular kerb (over 6 ft. radius), 6 in. by 12 in., at 1s. 5¾d. to 1s. 6¾d. per ft.; for tram, 12 in. by 6 in., at 1s. 6¾d. to 1s. 7¾d. per ft.
J. Mowlem & Co., Ltd., for straight kerb, 6 in. by 12 in., at 1s. 5d. to 1s. 6d. per ft.; for circular kerb, 6 in. by 12 in., at 1s. 7d. to 1s. 8d. per ft.; for tram, 6 in. by 12 in., at 1s. 6d. to 1s. 7d. per ft.

MILFORD.—For erecting buildings in the new burial ground, for Witley Parish Council. Mr. Thomas Bishop, architect, Milford, Surrey.

		Quantities by architect:—	
Greenfield, Weybridge	£376 8 0	Crosby & Co.	£271 10 0
Lawrence	364 14 6	Ellis	271 0 0
Fry	310 0 0	Enticknap & Sons, Witley*	263 0 0
Raynsford	304 18 2	Mitchell Bros.	262 13 0

OLDBURY.—For sewers reconstruction (Contract No. 7), for the Urban District Council. Mr. J. T. Eayrs, M.Inst.C.E., Clarence-chambers, 39, Corporation-street, Birmingham:—
H. H. Barry, Radcliffe-on-Trent, Nottingham* £2,268 6 0

PENYCAE.—For erecting retaining walls and fencing at Tai-Nant, for Wrexham Rural District Council. Mr. T. Rees Evans, District Surveyor, Johnstown, Ruabon:—

T. Jones & Son	£1,294 0 0	I. Jenkins, Johnstown, Ruabon*	£675 0 0
T. Ll. Davies	972 12 4		
S. & J. Davies	932 0 0		
J. T. Jones	839 0 0		

SHREWSBURY.—For erecting a new pavilion, Victoria-avenue, Severnside, for the Committee of the Old Shrewsbury Bowling Club. Messrs. Dickens-Lewis & Haymes, architects, Talbot-chambers, Shrewsbury:—

T. Elvins	£870 0 0	E. H. Nicholas	£815 0 0
G. H. Bickerton	856 0 0	H. Farmer & Son	790 0 0
W. H. Thomas	849 0 0	J. Hayes, Shrewsbury*	779 0 0
H. Price	848 0 0	Wilding & Son	746 8 7
T. Morris & Sons	840 0 0	W. Higley	734 0 0
Treasure & Son	839 0 0		
R. Price & Sons	830 0 0		

TEWKESBURY.—For proposed cookery centre and handicraft room, Tewkesbury, for Gloucestershire Education Committee. Mr. R. S. Phillips, Architect to the Education Committee, Midland Bank-chambers, Gloucester:—

Saunders & Sons, Ltd.	£665 0	A. J. Colborne	£628 18
J. Gurney	650 0	Coutts & Howell	567 0
W. Jones	650 0	Collins & Godfrey, Tewkesbury*	566 0

THAMES DITTON.—For making up Weston Park, for the Urban District Council of Esher and the Dittons. Mr. Horace C. Fread, Surveyor to Council:—

Atkins & Co.	£980 0 0	Thacker & Co.	£794 13 3
Adams & Co.	924 0 0	Kavanagh & Co., Surbiton-hill*	767 0 0
Sansom & Bishop	868 0 0		
Free & Sons	837 7 0		

TORQUAY.—For erecting new clergy vestry at St. Luke's Church, for the Vicar and Churchwardens. Messrs. E. Appleton & Son, architects, Torquay:—

R. F. Yeo & Sons	£177 0	Rowland Bros.	£121 0
T. Vanstone	139 0	H. C. Jackman	120 0
E. P. Bovey & Sons	121 5	J. Smerdon	104 0

[All of Torquay.]

TUNSTALL (Staffs).—For making up Newfield-street in tar macadam, for the Urban District Council. Mr. A. R. Wood, Surveyor, Town Hall, Tunstall:—

J. Taylor & Sons	£386 0 0	Saunders & Torrance, Hanley*	£352 0 0
F. Barke	361 12 3		
W. Williams	376 0 0		
W. Bullock	362 12 0		

TUNSTALL.—For erecting a five-pan flint mill. Messrs. A. R. Wood & Son, architects, Tunstall and Burslem:—

J. Gallimore	£4,883	W. Grant & Son	£4,325
W. Cooke	4,755	T. Godwin	4,299
S. Wilton	4,450	H. Howlett	4,235
Cornes & Son	4,449	J. Grant	4,050
C. Smith	4,400	Yorke & Goodwin	3,990
J. Cooke	4,350	C. Cope, Tunstall*	3,979

UPPER EDMONTON.—For the erection of the first portion of the new Infirmary at Bridport-road, for the Guardians of the Edmonton Union. Mr. Stuart Hill, architect, 106, Cannon-street, E.C. Quantities by Messrs. D. Campbell & Son 4, Finsbury-circus, E.C.:—

Dove Bros., Ltd.	£87,035 0 0
A. Porter	86,972 0 0
Miskin & Son	85,627 0 0
Fairhead & Son	84,317 0 0
Leslie & Co., Ltd.	83,681 0 0
General Building Co	83,495 0 0
Brand, Pettit, & Co.	82,297 0 0
C. Wall, Ltd.	81,950 0 0
Kirk & Randall	81,923 0 0
H. Lovatt & Co	81,712 0 0
Sabey & Sons	81,400 0 0
Perry & Co.	80,306 0 0
Waring & White, Ltd.	80,191 0 0
A. M. Coles	79,951 15 7
F. G. Minter	79,931 0 0
Spencer Santo & Co.	79,866 0 0
W. Johnson & Co	79,783 0 0
T. Rowbotham	79 777 0 0
Pattinson & Sons	79,346 0 0
A. Monk	79,300 0 0
W. Moss & Sons	79,180 6 11
Hawkins & Co.	77,690 0 0
B. E. Nightingale	77,113 0 0
H. Knight & Son	76,811 0 0
Patman & Fotheringham	75,444 0 0
J. Greenwood, Ltd.	75,384 0 0
W. Lawrence & Sons*	72,724 0 0

WELLINGBOROUGH.—For the construction of a street about 200 yds. in length, Stanley Building Estate. Messrs. Sharman & Archer, architects and surveyors, Wellingborough:—

Goodman & Murkett	£574 0	F. Marriott	£475 0
Henson & Son	520 0	W. G. Willmott, Rushden	428 0
W. Smart	519 10		

WEYMOUTH.—For the erection of a pavilion, for the Town Council. Messrs. Mangnall & Littlewoods, architects, 42, Spring-gardens, Manchester:—
Main Building.
Wakeham Bros., Plymouth £5,759
Steel and Iron-work.
Dorman, Long, & Co., Westminster £2,029

YORKLEY.—For erecting a new Council School, for Gloucestershire Education Committee. Mr. R. S. Phillips, architect, Midland Bank Chambers, Gloucester. Quantities by Messrs. Vale & Kingsford, St. Aldate-street, Gloucester:—

Saunders & Son, Ltd.	£4,373 0 0	J. Simmonds	3,735 12 2
J. Gurney	3,950 0 0	Walters & Sons	3,687 0 0
Adams & Jefferies	3,889 4 9	Orchard & Peer	3,615 0 0
Woolley & Sons	3,869 0 0	Wall & Hook	3,610 10 0
A. S. Cooke	3,833 10 0	Byard & Son	3,587 0 0
E. Preece	3,790 0 0	Collins & Godfrey	3,577 0 0
W. T. Nicholls	3,739 0 0	A. J. Colborne Swindon*	3,449 15 0

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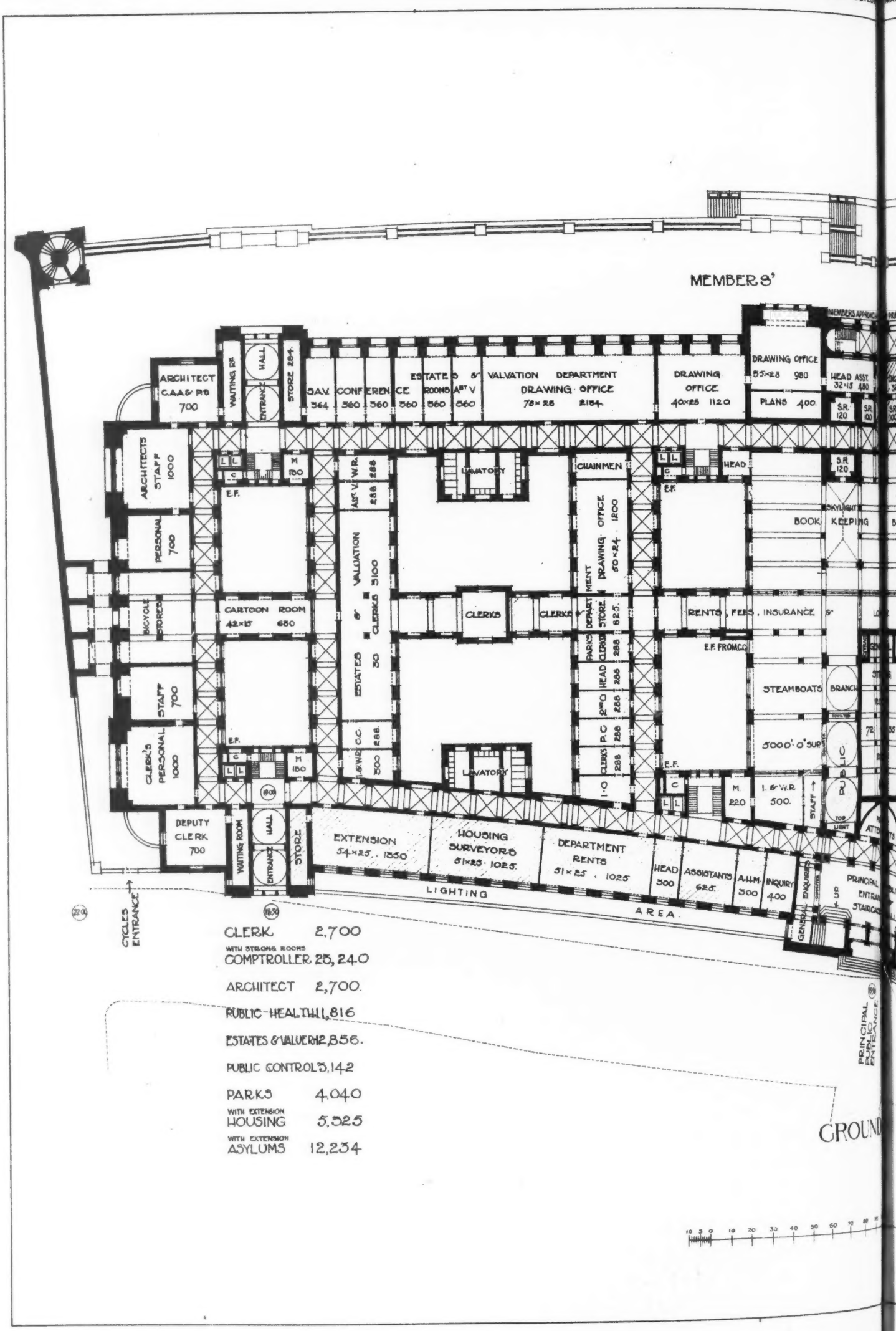

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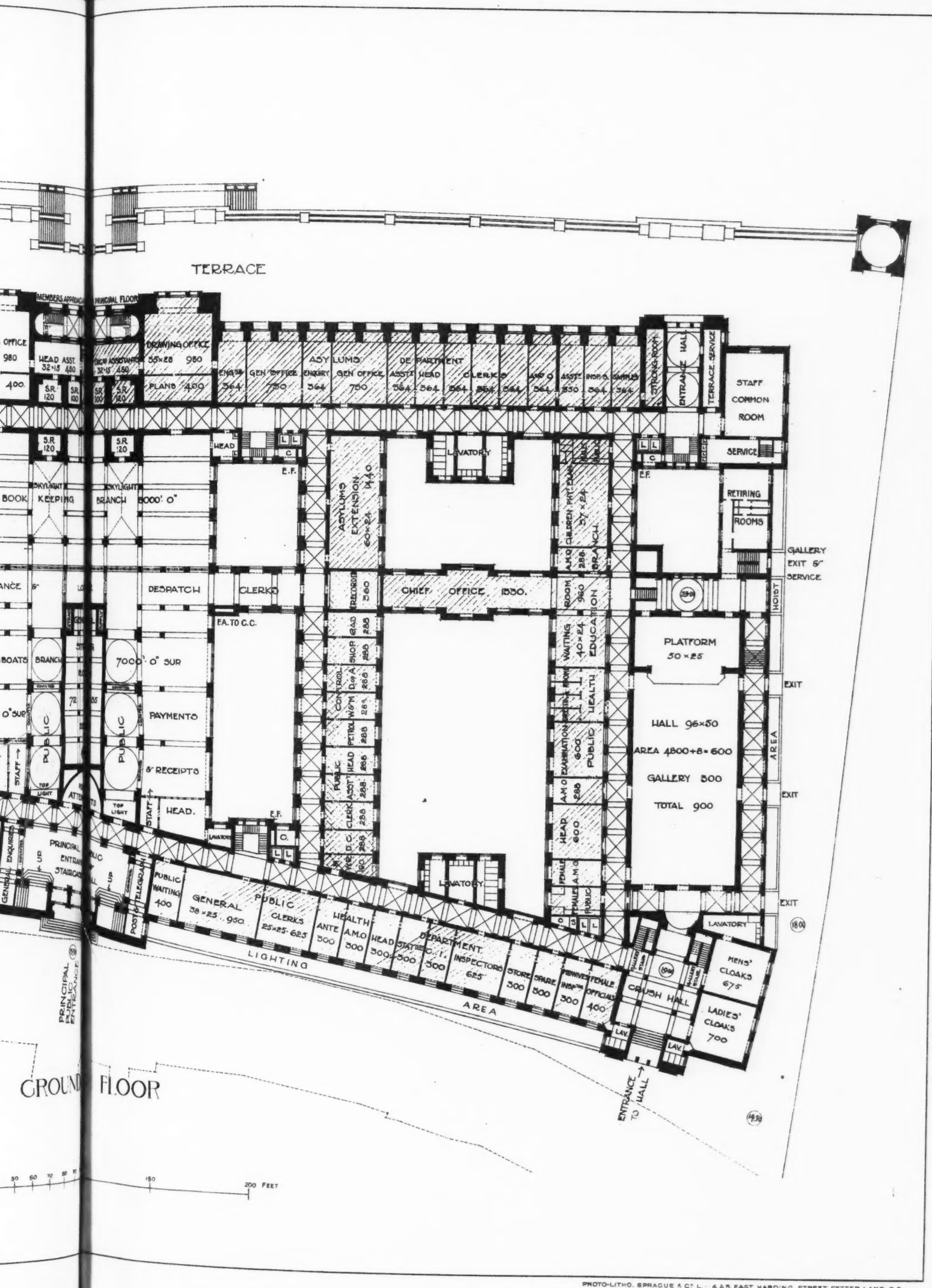

GROUND FLOOR

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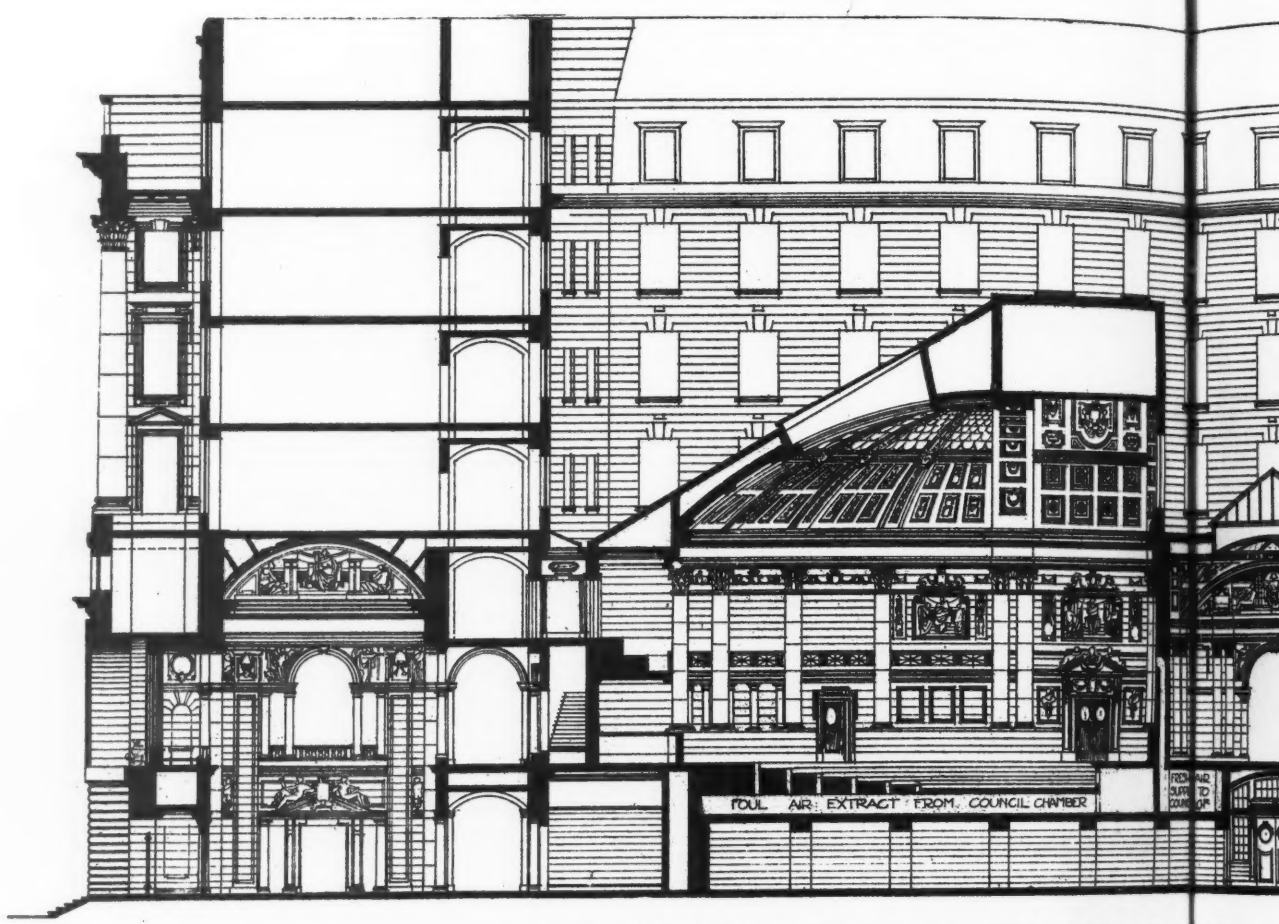

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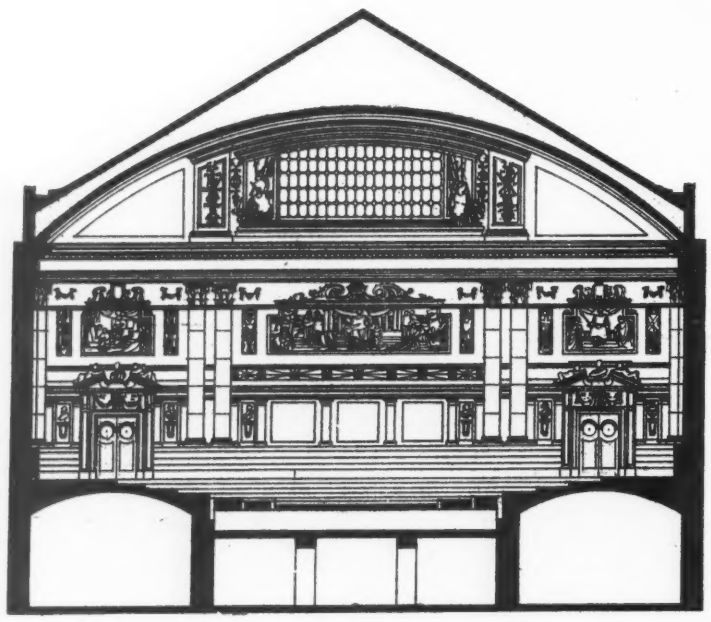

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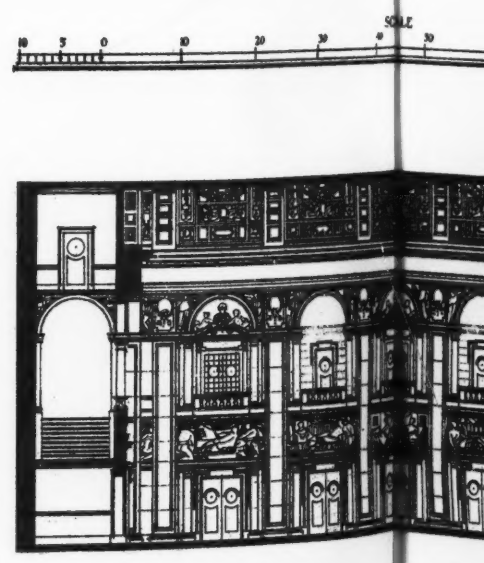

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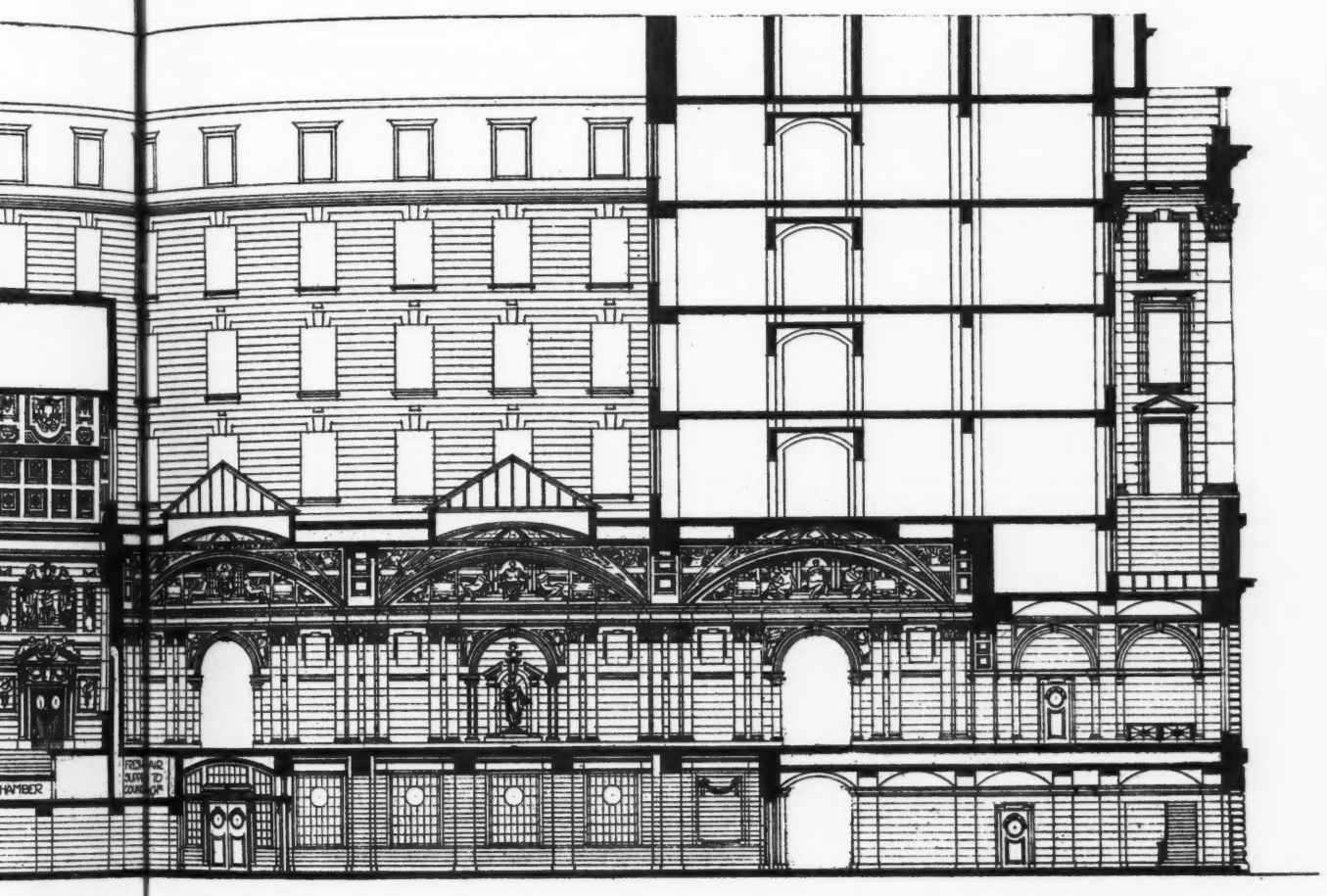

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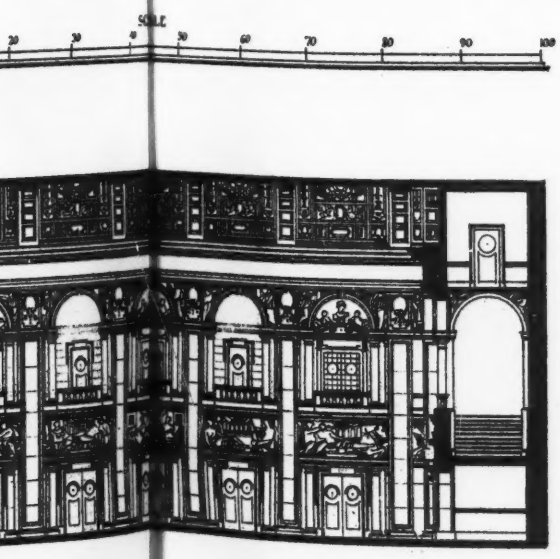

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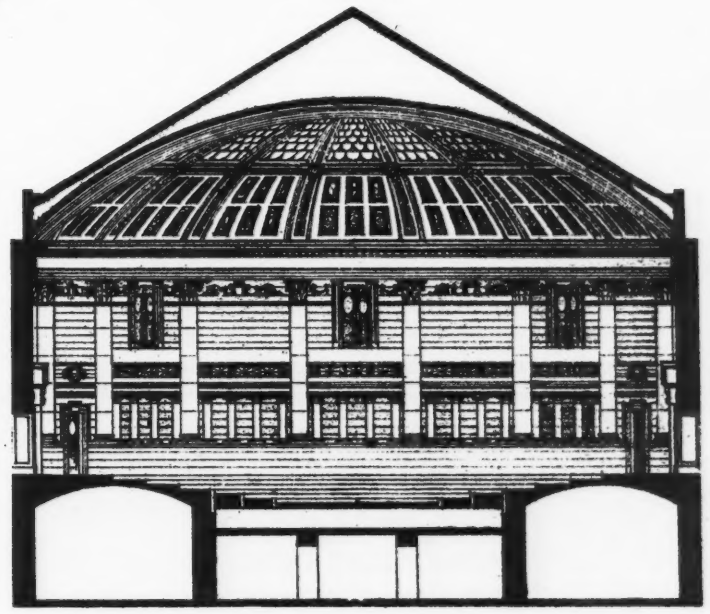

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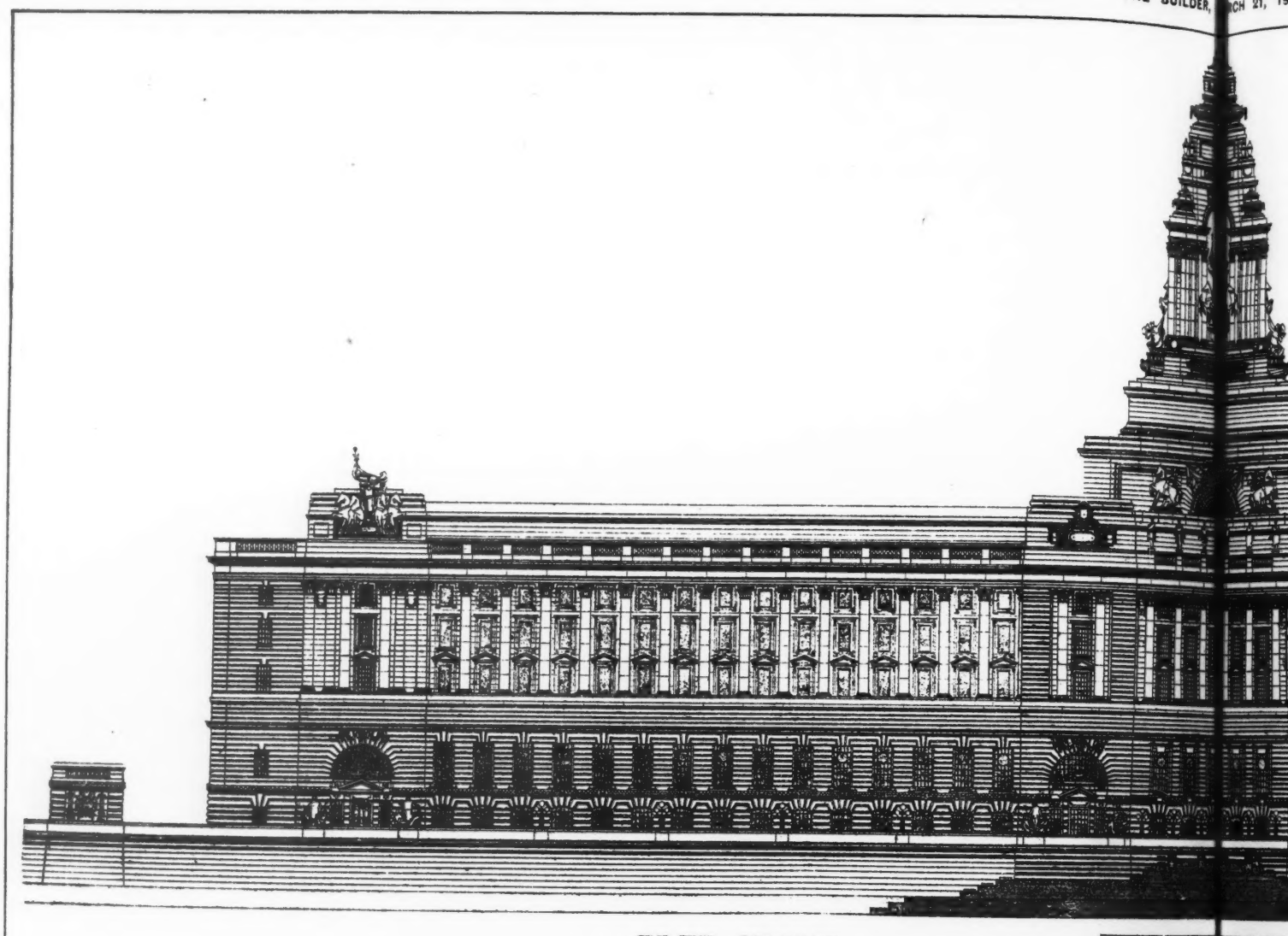

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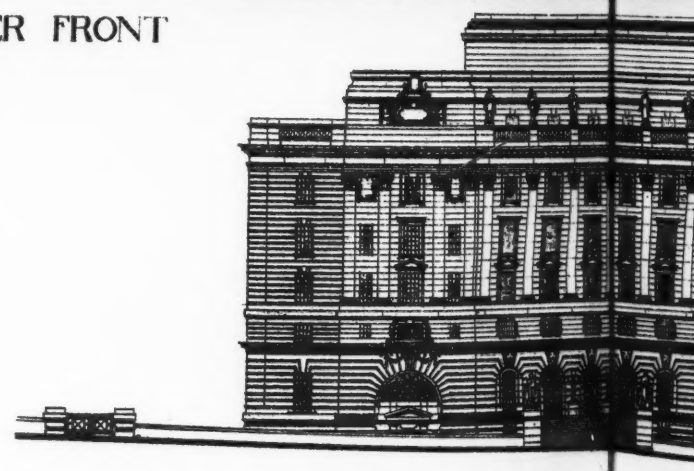

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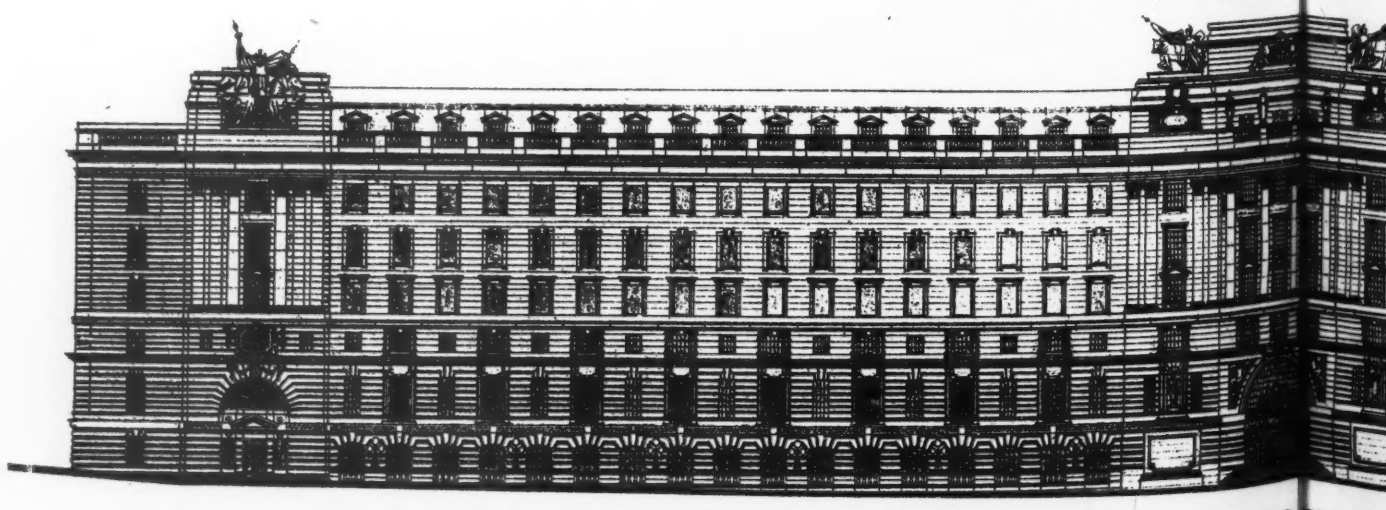

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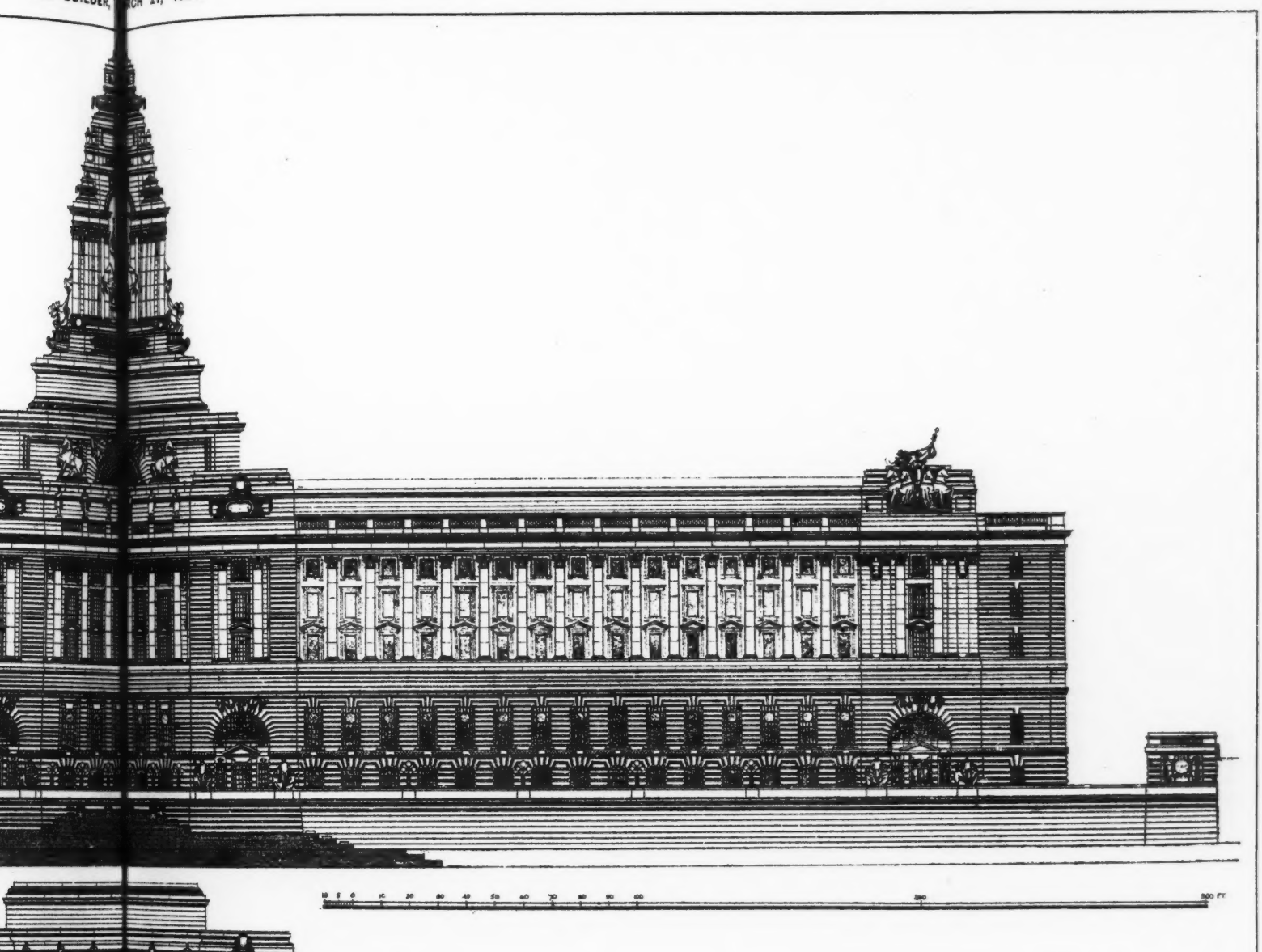

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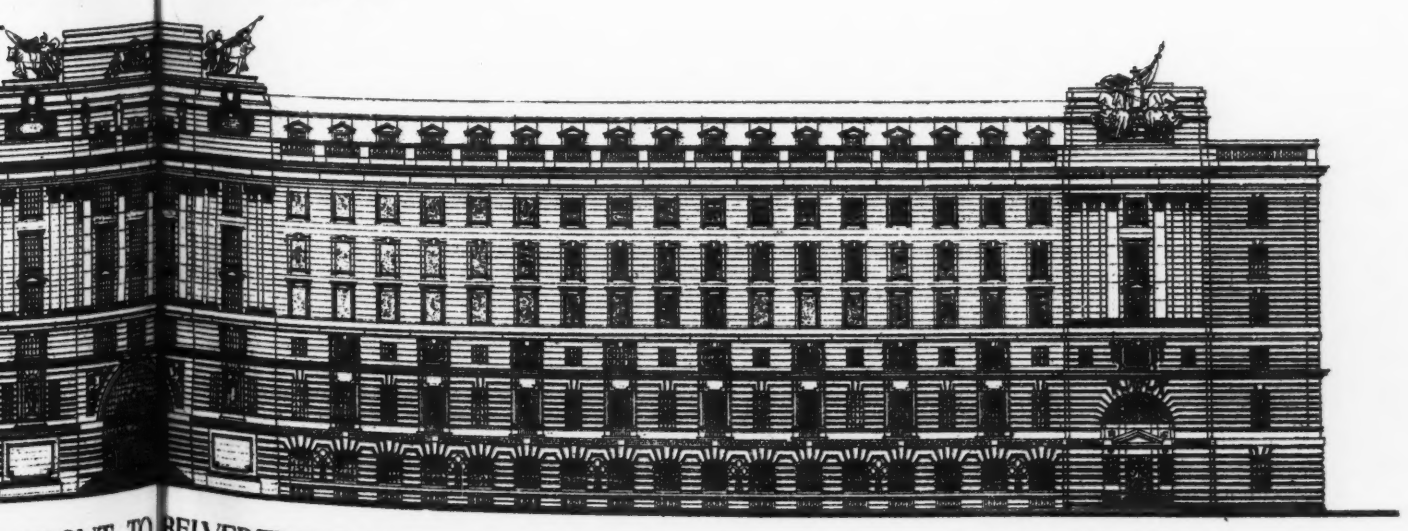

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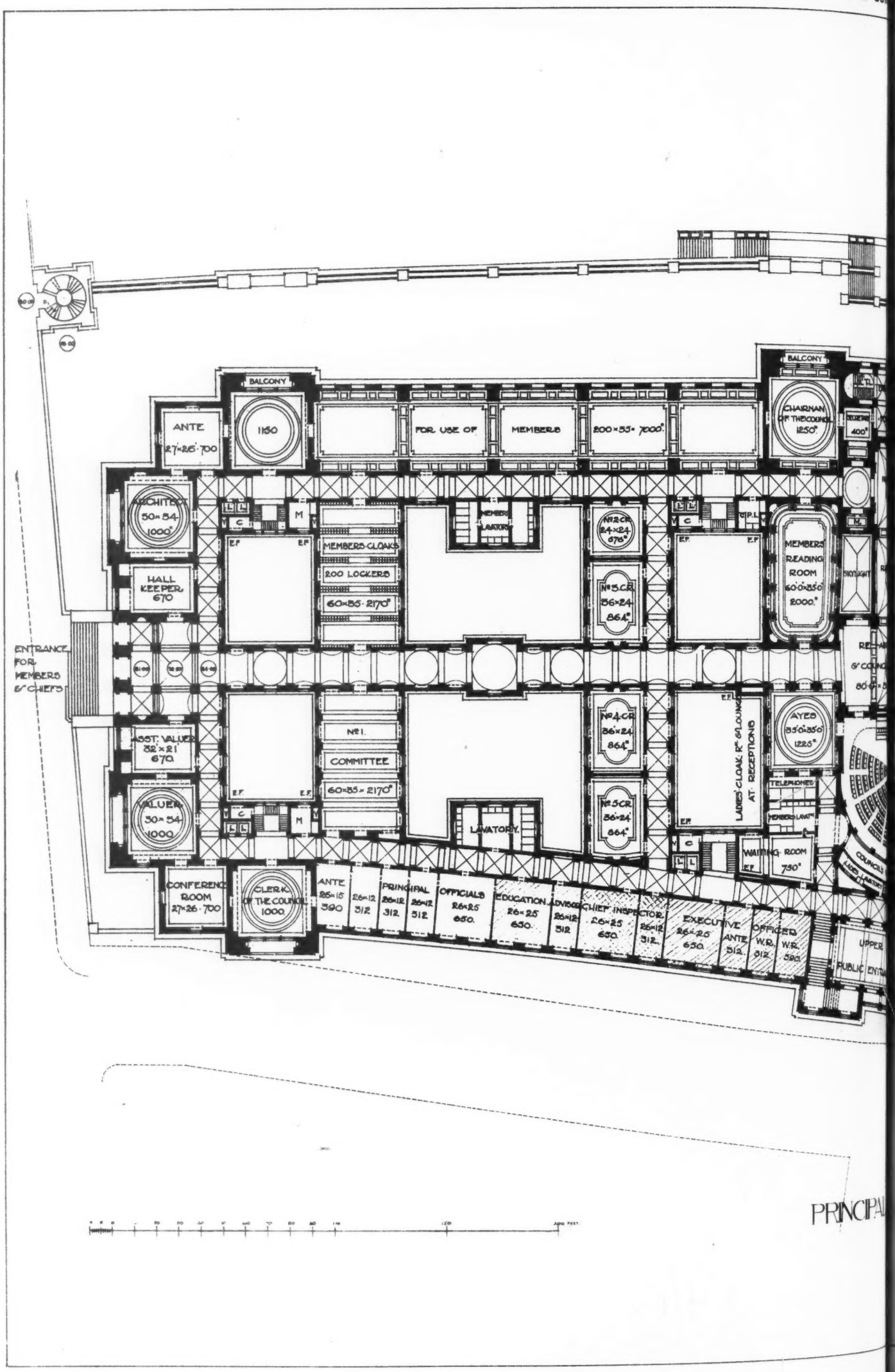
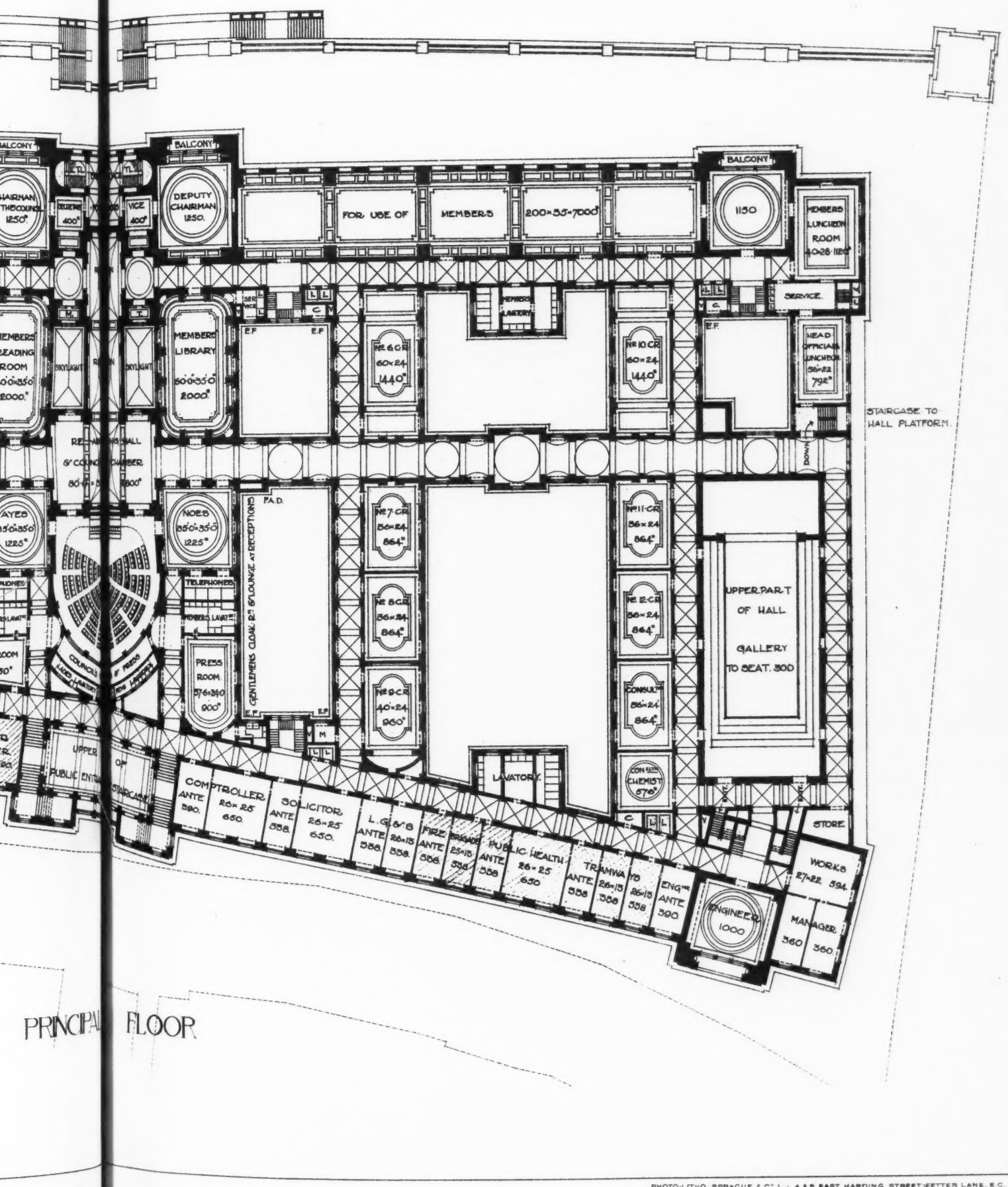


PRINCIPAL FLO

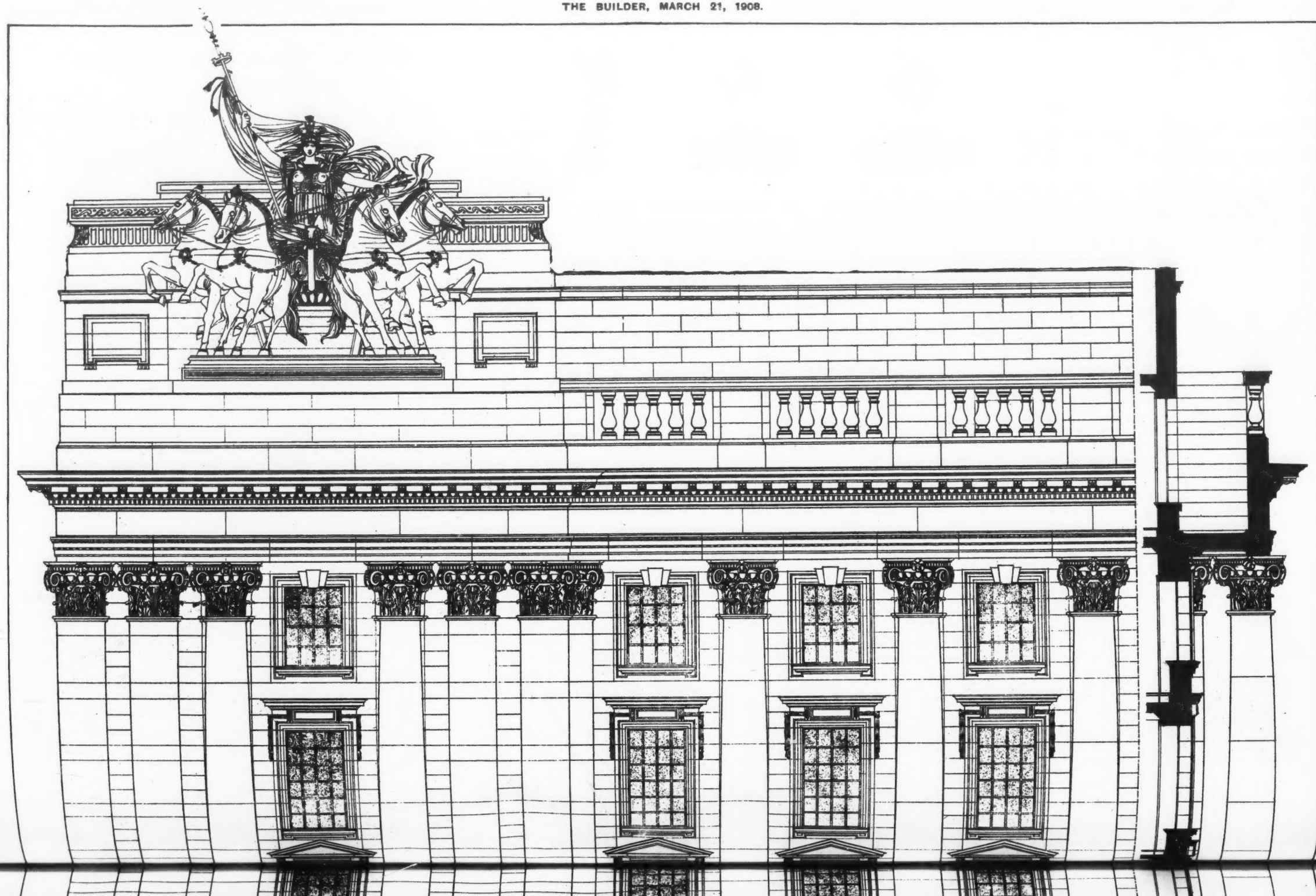
LONDON COUNTY HALL COMPETITION.—DESI MESSRS.

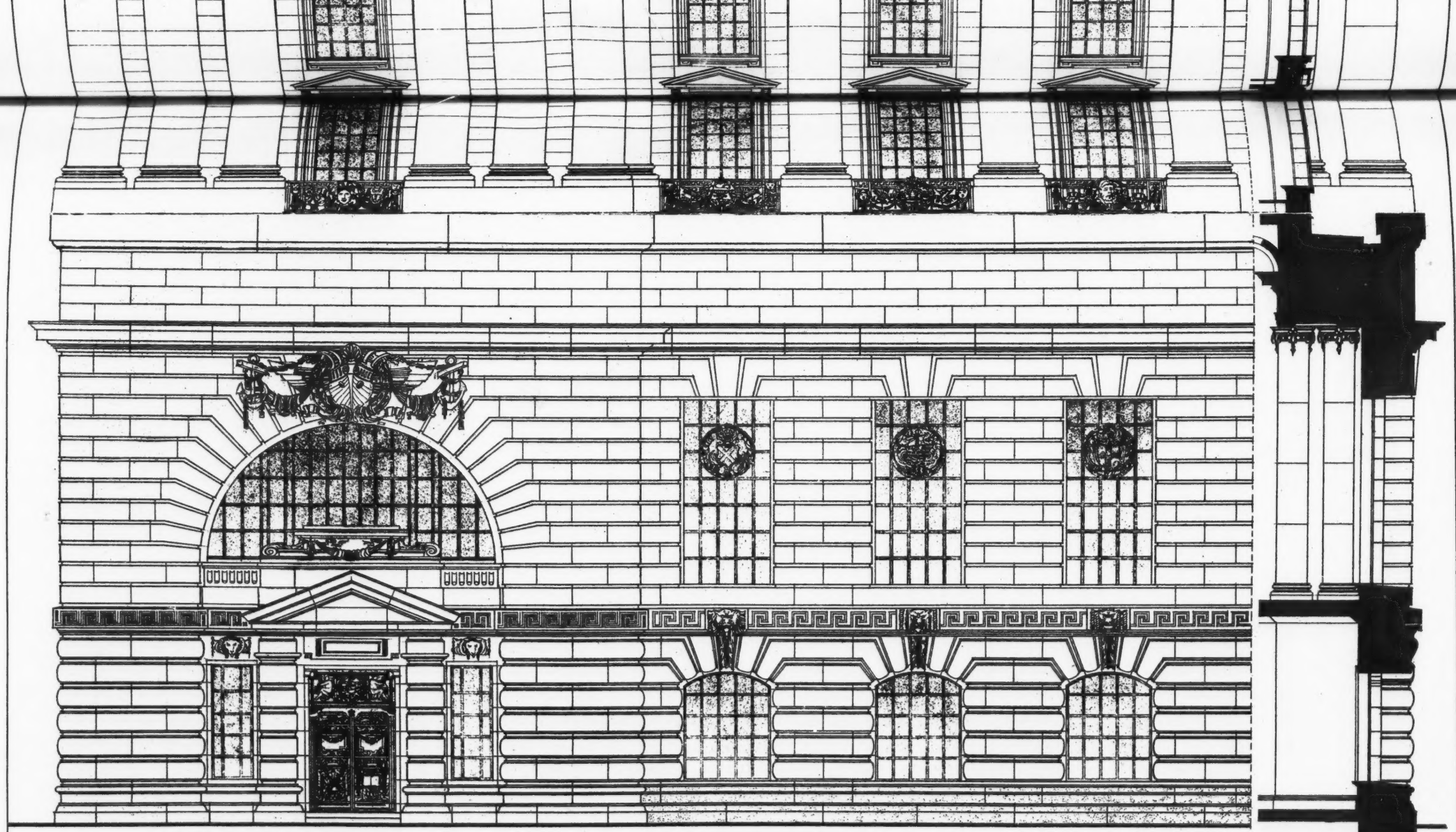


PRINCIPAL FLOOR

PHOTO-LITHO. SPRAGUE & Co LTD. 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

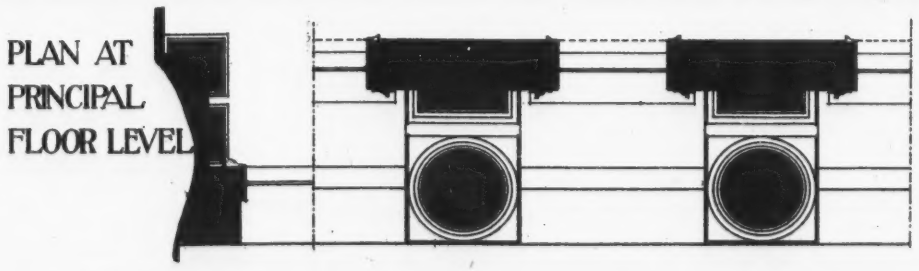
PETITION.—Messrs. S. B. Russell & Edwin Cooper, FF.R.I.B.A.





LONDON COUNTY HALL
DETAIL OF RIVER FRONT

SCALE



PLAN AT PRINCIPAL FLOOR LEVEL

PLAN AT THIRD FLOOR LEVEL

SECTION THRO' FRONT WALL

PHOTO-LITHO. SPRAGUE & Co LTD 4 & 5, EAST HARDING STREET, FETTER LANE, E.C.

LONDON COUNTY HALL COMPETITION.—DESIGN BY MESSRS. S. B. RUSSELL & EDWIN COOPER, FF.R.I.B.A.